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THE IRON AGE.

VOL. LXIII.

JANUARY-JUNE, 1899.

NEW YORK:
DAVID WILLIAMS COMPANY
232-238 WILLIAM STREET.

V.



THE IRON AGE

A Review of the Hardware, Iron and

Published every Thursday Morning by David Williams Co., 232-238 William St., New York.

Vol. LXIII: No. 1. New York, Thursday, January 5, 1899.

\$4.50 a Year, including Postage.
Single Copies, Ten Cents.

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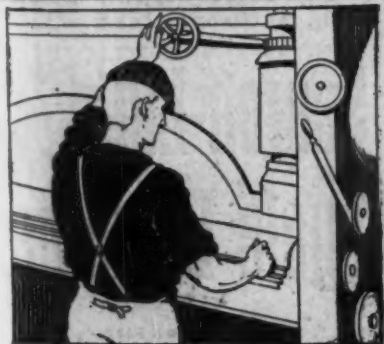
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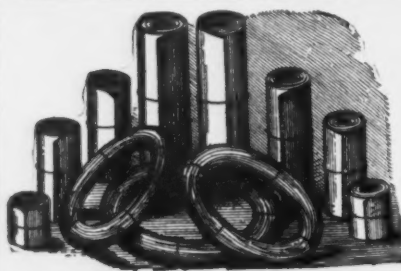
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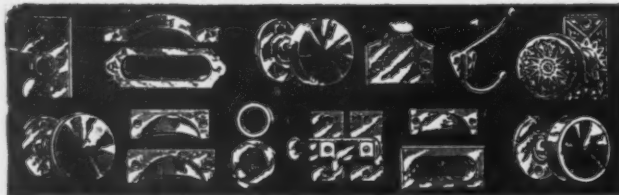
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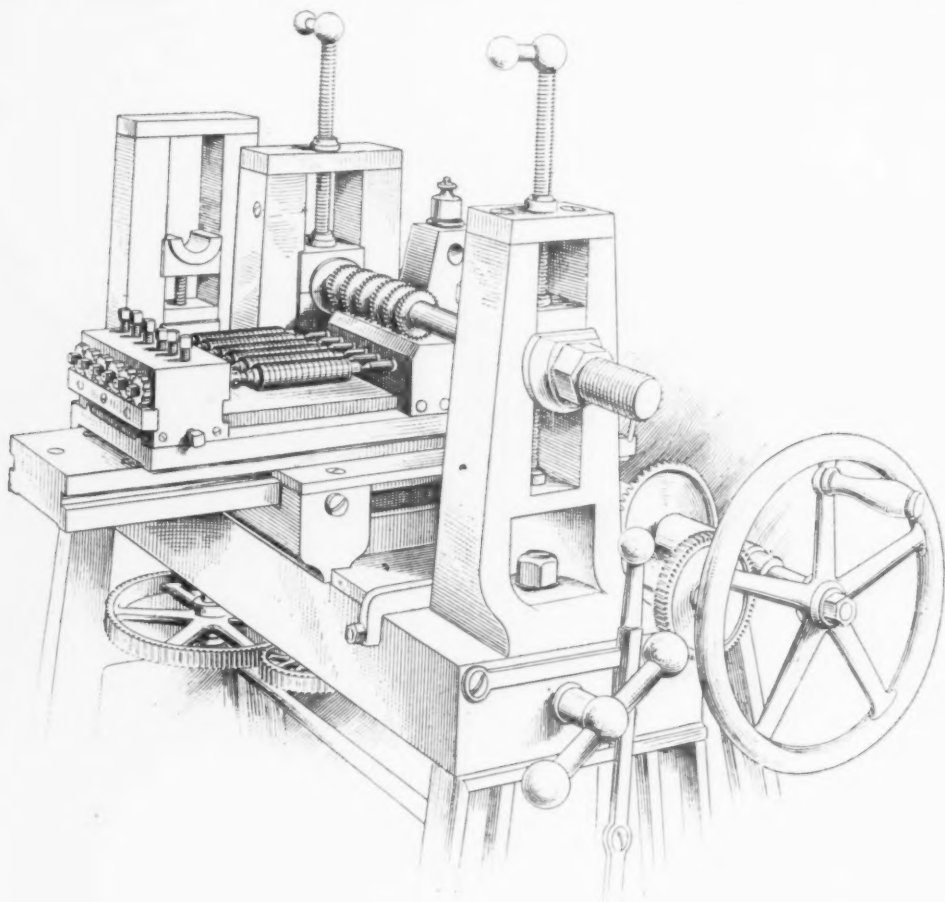
THURSDAY, JANUARY 5, 1899.

The Making of a Ball Bearing Ratchet Bit Brace.

The ordinary bit brace of the carpenter consisted principally of a rod bent so as to form a crank provided with a rest at one end and a socket at the other end for the reception of the tool, and it might be a handle on the crank. In these early tools little or no attempt was made toward refining the implement. It was a rough device intended for rough work, and both in its manufacture and in its employment nothing was expected in the way of accuracy

derived from modern shop practice and the employment of tools especially adapted to the work.

The bit brace as we know it to-day is a tool which will compare favorably with any and all others. While in its general design—that is, the crank form—it has followed the original type, so many changes have been made throughout that it is now capable of doing severe duty, and of doing it accurately. The rest has been improved in design and method of construction, the handle has advanced along the same lines, while the chuck as a whole has changed in material and workmanship. A double ratchet has been provided, which permits the operation of the



Milling Ratchet Wheels.

THE MAKING OF A BALL BEARING RATCHET BIT BRACE

or finish. If it would hold the tools and possessed sufficient strength for the work in hand, no more was expected of it. If the rest end chanced to be in align with the tool end so much the better, but if these two parts were not in alignment it did not attract notice. If the tools held in the brace wobbled more or less it might create dissatisfaction on the part of its owner in certain work, but that same owner did not expect any better tool in early days. The sockets were generally square holes into which the bit shank fitted more or less closely. In the first forms the bit was held in the socket by means of a spring detent which entered a groove cut in the side of the bit shank. In all of the first forms the tool was exceedingly rough in design and finish, and it was not until comparatively late years that any attempt was made at improving the design, increasing the efficiency of the implement and producing it in a workmanlike way, with all of the benefits to be

drill in either direction. The brace has even caught the ball bearing fever and we now find them commonly equipped with a ball bearing under the head or rest, which provides for the easy operation of the brace, no matter what weight may be brought on the head. Again, and more essential, the ball bearing has found place in the chuck, and in some forms of braces it has been there placed in order that the friction due to the turning of the chuck both in grasping and loosening may be eliminated. This feature is a most valuable one, and one that will be appreciated by any user of an ordinary brace who has attempted to grip firmly a round rod such as a twist drill. By the introduction of a ball bearing full power is applied directly to the gripping jaws even as by the use of the ball bearing in the head the full power of the arm is utilized in turning the crank in either direction, friction being done away with.

H

While as stated the brace even of to-day is composed only of a bent rod and a tool carrying chuck, we doubt if any one not familiar with the business and intimately acquainted with its various processes has any appreciation whatever of the amount of work expended in its manufac-

and to thereby hold the handle firmly in place. One end of the frame is then threaded to enter a tapped hole in the ratchet head, shown at the left in Fig. 2, in which it is sweated with hard solder in order to make a perfect and permanent union. This soldering process consists in



Fig. 2.—Frame or Sweep Before Bending.

ture or of the patience and skill which have been exhibited in the design of special tools for making it.

Through the kind courtesy of the Peck, Stow & Wilcox Company of 27 Murray street, New York, a representative of *The Iron Age* was permitted to visit one of their extensive works at Plantsville, Conn., and to there examine the most interesting methods connected with the manufacture of the brace.

It will be noticed as we proceed with the description that all of the methods and most of the appliances are noticeable for their simplicity. The aim has been throughout to produce the work of every part rapidly and with the utmost accuracy. Existing trade conditions and competition have made necessary the former, while the inflexible rule of interchangeability of parts has accounted for the latter. Some of the work seemingly of great difficulty has been overcome by most ingenious devices. All of the parts are made by the thousand, sent in bulk to the assembling room, where the tools are put to-

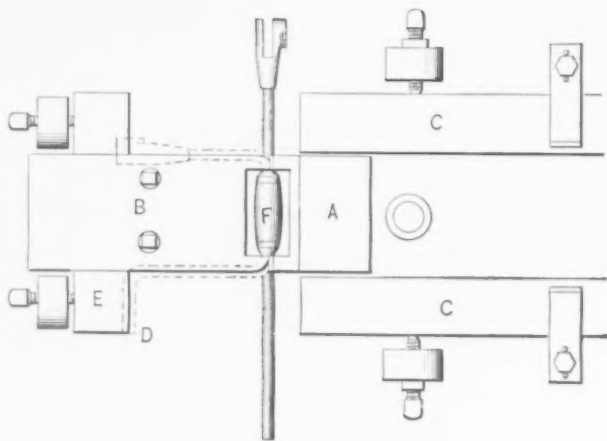


Fig. 3.—Sketch of Frame Bending Machine

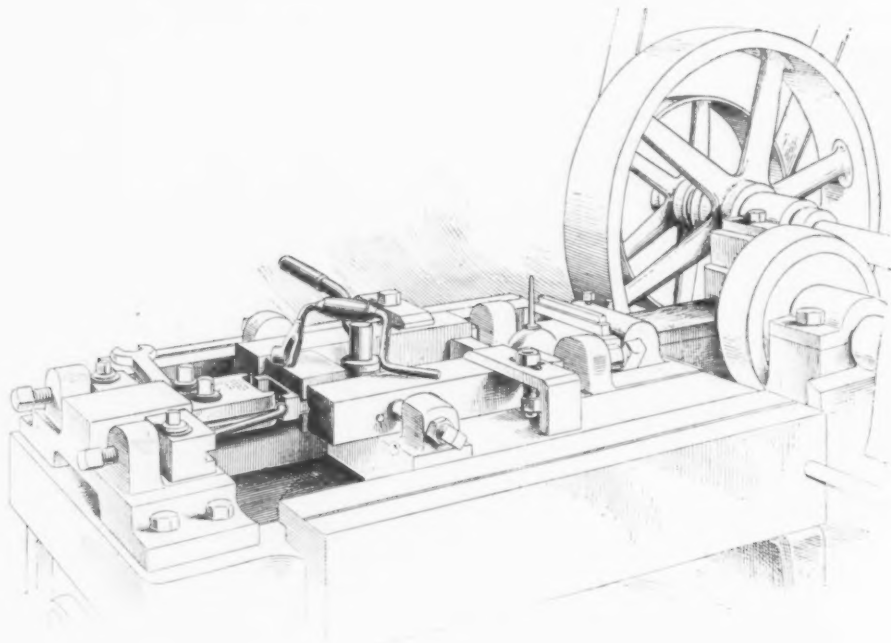


Fig. 4.—Frame Bending Machine.

THE MAKING OF A BALL BEARING RATCHET BIT BRACE.

gether, two or three minutes being sufficient for the experts in this department to bring all the parts together and finish the tool ready for shipping.

The Sweep or Frame.

The sweep or frame, Fig. 2, consists of a steel rod bent into a U shape, one leg of the U being longer than the other, and having its end portion again bent at right angles, or parallel with the cross bar. This rod is first knurled or milled at B, Fig. 2, upon which milled portions the ferrules C are forced after the cocobola handle A has been placed on the frame. By milling these portions the metal of the rod is raised or elevated in ridges, which serve to firmly grip the ferrules when they are forced on

dipping the two parts which are to be united in a weak solution of muriatic acid, which cleanses the surfaces perfectly, and then dipping the pieces in melted solder, which adheres in a thin layer to the parts. The pieces are then brought quickly together and the joint screwed up, the result being a joint which is reliable to a degree. In the first place the threaded portions are a close fit, so that when they are put together with the solder between them and firmly adhering to the contacting surfaces a union of great strength is assured.

The next work in connection with the frame is the bending of it into U shape, which is done in the machine illustrated in Fig. 4. A diagrammatical sketch of the dies of this machine is shown in Fig. 3, in which no attempt

has been made to produce the parts to accurate dimensions, the idea being only to convey some notion of the principle involved. The stationary die B is provided at its right hand end with a recess, a similar recess being formed in the die A, both being intended to admit between them the handle of the frame F. The movable dies C, driven by crank from the main shaft, bend the projecting parts of the frame to a position nearly parallel with one another. As the long arm of the frame, the lower one in Fig. 3, is bent, its end comes in contact with the projection

the extreme end of which is riveted up in order to hold the quill. To the top of the quill is secured the wooden head D, which forms the rest proper.

The Ratchet Head.

The ratchet head goes to the works as a rough malleable iron casting. The first work upon it is done by the multiple drill Fig. 8, which bores the hole X Y, Fig. 7, and faces and turns the outside of this hole. This head is carried by the short arm of the sweep, and in the hole X Y is mounted the stud of the chuck, and in the slot the ratchet wheel. It is essential, owing to the design of the tool, that the several portions of this head upon which any work is performed should bear a constant and exact relation to the hole, therefore the subsequent work upon the head is performed in jigs which are so designed that the hole itself is the foundation, or, in other words, the work may be said to be carried on with the hole as a center. In the machine shown in Fig. 9 the head is held between centers, which enter the hole X Y, a milling cutter or saw being brought into play to cut the slot for the ratchet and its pawls. Then the hole A is bored and tapped for the frame, after which the head is held in a jig, Fig. 11, and the two small holes B bored for the pins which hold the pawls in place. The construction of this part of the tool will be understood from Fig. 10, in which A represents the end of the sweep, F the stud on the lower end of the

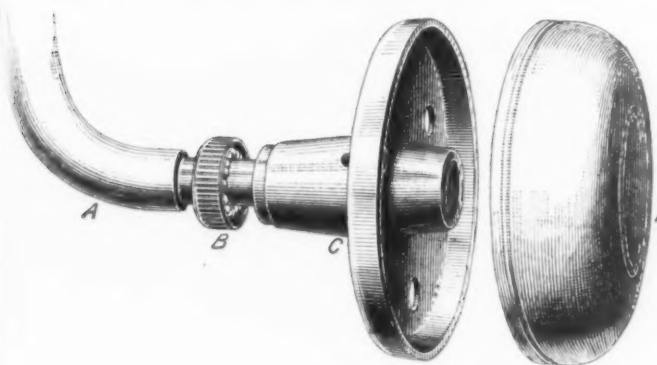


Fig. 5. Ball Bearing Under Quill

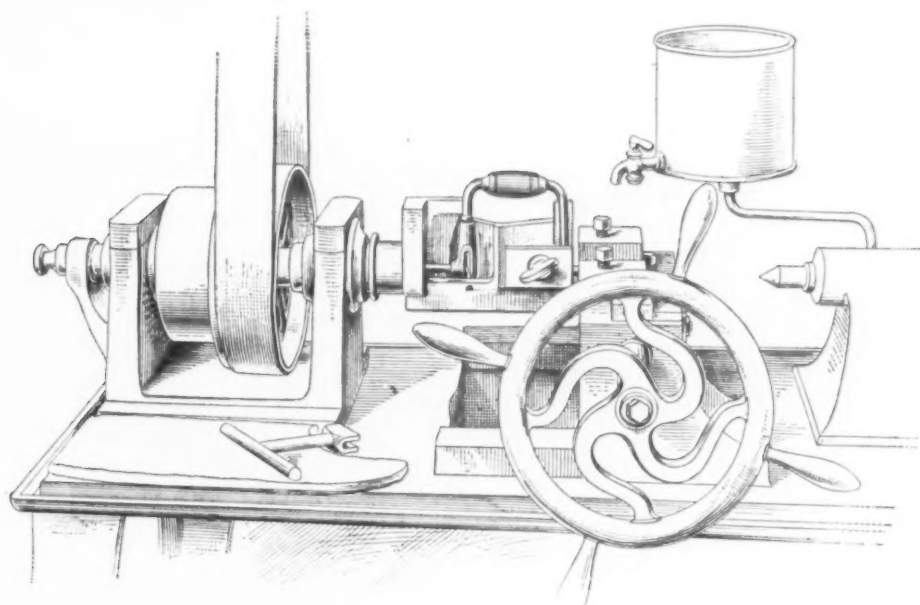


Fig. 6 - Turning End of Frame to Receive Quill.

THE MAKING OF A BALL BEARING RATCHET BIT BRACE.

E on the die B, this end part being thereby bent at right angles with the part lying alongside the die. The dies are grooved and the corners rounded in order to receive the frame, which, when completed, occupies the position indicated by the dotted lines in the drawing.

The next operation in connection with the frame is the turning down of the long end in order to receive the ball bearing and the quill in the head, as shown in Fig. 5, in which the several parts are separated slightly. This work is done in a special machine, shown in Fig. 6. The frame is held in a jig carried by the live spindle, and which is so formed as to firmly support the frame and also to impart to it a motion coincident with that of the spindle. The end to be turned is entered in a tool guide, in which its diameter is reduced. This operation produces a reduced portion near the end of the frame and provides a shoulder, A, against which the ball bearing cup B rests.

The quill of the head C is of cast iron, finished upon the exterior, and the inner end of which bears against the balls. The quill is bored to receive the end of the frame,

chuck, D the ratchet wheel, C the balls, B a plate normally forced against the pawls by the spring E, which serves to hold the pawls either in their engaged or disengaged position. On the plate B is a central lug which is encircled by the spring. The outside of the pawls as shown in this engraving is formed with a right angled portion, so that when they are in engagement with the ratchet as drawn they will be held firmly in that position. When thrown out or away from the ratchet the other portion of the right angle is engaged by the plate and the pawls are then held in their new position.

Socket.

The socket C, Fig. 12, is a malleable iron casting intended to carry the jaws, the sleeve or shell operating the jaws and the stud which enters the ratchet head. This piece is first broached to form a bearing for the jaws, and is then bored and tapped to receive the stud, after which the projecting portion C is turned and polished. The stud F is screwed into the end of the socket B, and this position is permanently secured by the pin, which is inserted and riveted in place.

The chuck jaws are formed in pairs—that is the two jaws are united at their lower ends. They are dropped forged from tool steel, the middle portion being thinned somewhat in order to provide a spring, the tension of which insures the opening of the jaws. The jaws are correspondingly toothed, A, Fig. 12, the teeth interlock-

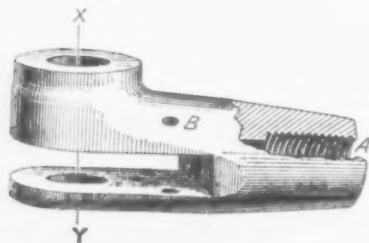


Fig. 7.—Ratchet Head

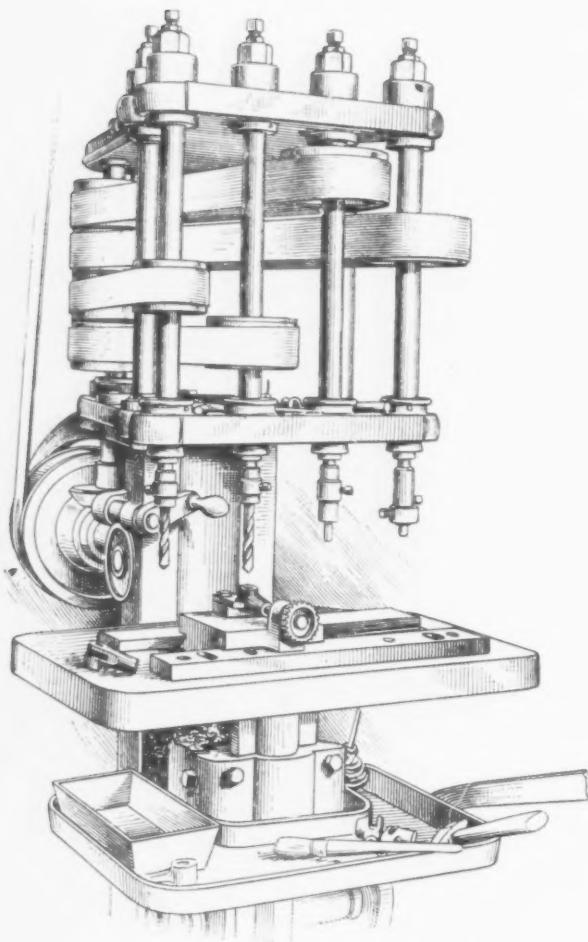


Fig. 8.—First Operation on Ratchet Head.

or away from the cutter the distance of one-half of a thread, when the other half of the jaw is cut. By this simple expedient a mutilated thread is obtained which, as far as accuracy and efficiency are concerned, possesses all the advantages of a continuous thread.

The Shells or Sleeves.

The shells or sleeves B, Fig. 12, are those parts which operate the jaws by moving them in or out of the socket, the beveled portions of the jaws accounting for their movement toward or from each other. The shells are made from a continuous bar of tool steel in the screw machine shown in Fig. 16. First the outside or gripping part is milled in a special tool shown in position ready to approach the blank. Next the rod is bored and tapped, a spiral tap being employed as being considered more efficient and easier to work. The side tool at the rear of the machine bevels the ends while the side tool at the front does the cutting off. After having been completed the shell and also the chuck jaws go to the tempering department, the former to be hardened and the latter to be spring tempered, and also hardened in the jaws proper.

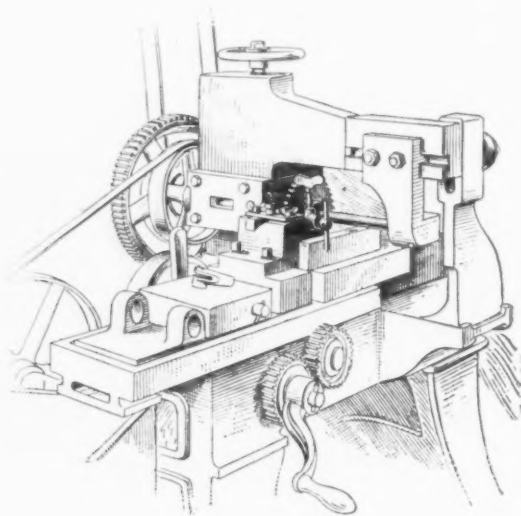


Fig. 9.—Milling Slot in Ratchet Head.

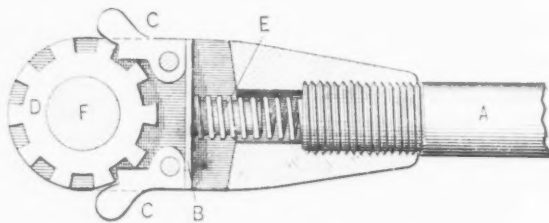


Fig. 10.—Ratchet Head with Parts in Position

THE MAKING OF A BALL BEARING RATCHET BIT BRACE

ing. The faces are also provided with a small longitudinal groove to hold small tools. The rear end A of the jaws is threaded in order to engage with the operating sleeve B.

The method of cutting this thread is not the least interesting operation. It is performed on a machine shown in Fig. 15, which carries an ordinary gang cutter so proportioned as to cut a thread of the desired pitch. The design of this machine and its operation will be understood from the diagrammatic sketch, Fig. 14, in which A is supposed to be the cutter and B the work or jaws operated upon. It will be noticed that B is placed at a slight angle with the axis of the cutter A, this angle corresponding to the angle of the thread to be cut. The blank is held in a simple vise and the thread upon one-half or one side of the jaws cut. After this the jaw is turned half way over, regripped in the vise, which is moved forward

All those parts of the tool which require polishing for final nickel plating pass to the polishing department, where they are brought to a fine finish on the strapping machine, Fig. 17, which consists of a leather belt traveling over pulleys and furnished with fine emery.

The ratchet wheels D, Fig. 10, are also made of tool steel, which is finally hardened. These wheels are cut on the machine illustrated in the first engraving, the disks or blanks being mounted on mandrels which are held between centers on the table of the machine. Gang cutters or saws, one for each mandrel, carried by a common arbor, cut the teeth as the blanks are fed beneath them. One end of the table is provided with intermeshing gears of the same size which turn the centers carrying the outer ends of the mandrels simultaneously, the spacing being accomplished with an ordinary index. At the time the photograph of this machine was taken it was partially

dismantled, and therefore only the essential parts were put in place in order to convey some idea of the principle of its construction.

In this form of brace a steel friction plate is inserted between the ratchet head and the chuck at D, Fig. 12, this

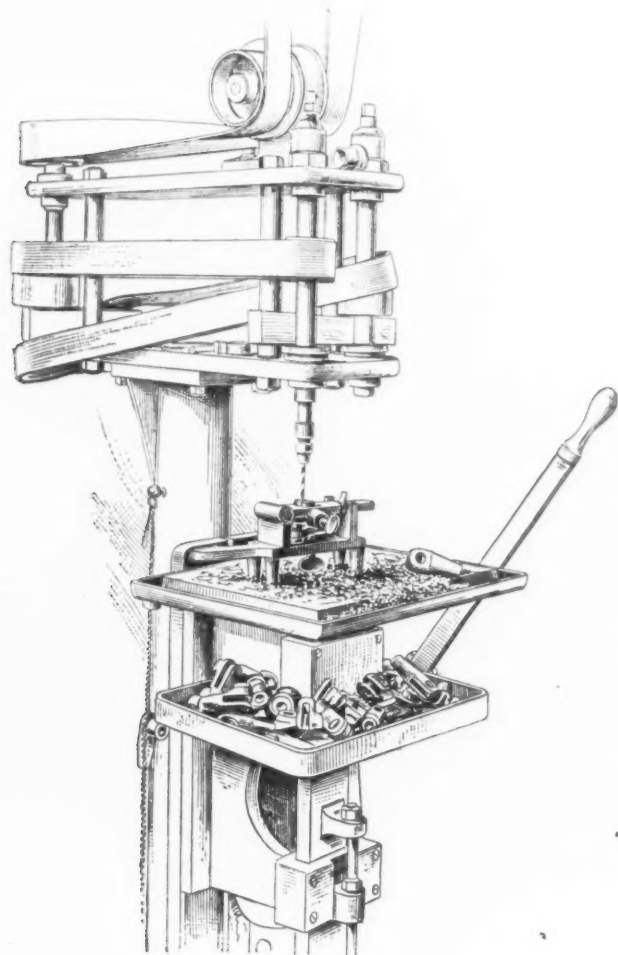


Fig. 11.—Drilling Holes in Ratchet Head for the Pawl Pins

The Electrical Industries in 1898.

T. C. Martin, editor of the *Electrical Engineer*, has contributed to the *New York Times* the following review of the electrical industries in 1898:

For the electrical industries, taken in the large, the year 1898 was chiefly a period of recuperation. New and progressive, they were the first to feel the bad effects of 1893, but the better times of 1899 will perhaps do more for them than most other branches. It has perhaps not been noted that two electrical securities head the New York Stock Exchange list for the whole year as to gain in price as investments.

New York Edison during the year went up \$70 per share and Metropolitan Street Railway \$62 per share. These advances were excelled by only one stock, and that a speculative industrial, whereas the properties I have named are at once high class legitimates and genuine money breeders. The year 1899 is going to prove that many other electric lighting and street railway properties are in the same class. Nothing can prevent the rapid solidification of their value and their absorption by foresighted investors.

The electric street railway field is perhaps pretty well developed. It has been the chief electrical area and outlet for capital for ten years, and every good chance in the cities has been seized. But in lighting the situation is wholly different. Benefiting by economies in production of current on the large scale, learned from railway plants, the lighting companies are, as 1899 will show, in a position of enormous advantage. Every year lately has seen some new use for their current, while an enormous reduction has gone on in the price of the lamps, motors, heaters, &c., placed on their circuits by consumers. The electric lighting field is very much under developed.

At the present moment there is still little union or little unanimity of sentiment among gas, electric lighting and electric railway interests. For myself, I would venture to predict that out of the coming efforts to bring about intelligent co-operation and unification of management will be created a series of the best properties ever dealt in by the financial centers. The oppositions between such interests are in reality all factitious and fugitive.

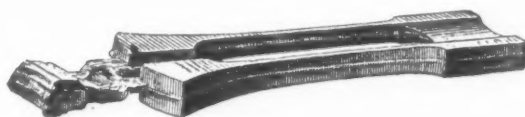


Fig. 13.—Chuck Jaws in the Rough.

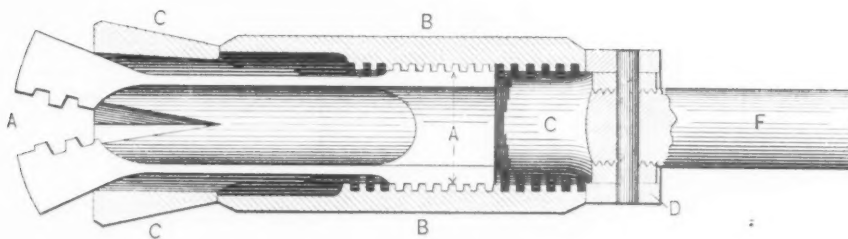


Fig. 12.—Section through Chuck

THE MAKING OF A BALL BEARING RATCHET BIT BRACE.

plate not only taking the wear, but acting materially to reduce friction.

When the many parts reach the assembling room the ball bearing cup and the balls are put on the end of the sweep, which is inserted in the quill, and then the end riveted over with a hand hammer, after which the wooden head is screwed on. The socket is inserted in the shell, the collar D put on and riveted to the stud F, which has been screwed into the socket, after which the jaws are inserted and screwed down by means of the shell.

The brace is finished by the insertion of the spring E and its plate and stud B, Fig. 10, in the ratchet head, after which the ratchet is placed in position on the stud F, which is riveted in the ratchet head. Pawls are then inserted and secured by the pins shown in Fig. 10.

There should be signs in 1899 of an appreciation of this fact by Wall street financial leaders.

I look to electricity and kindred motive powers for an early retirement of the horse in cities, both for passenger service and for expressage and truckage. We shall get cheap cabs and cheap drays from large companies controlling the bulk of the public patronage in these lines. The stables must go, and as the mechanical vehicles come in large corporations will necessarily arise either to operate these services or to conduct charging stations in various parts of each big city. This advance in urban civilization is imminent. The electrical inventor has practically done his share of the exploitation, and has produced many good types of automobile. Courageous capital, well advised, now has one of the best chances yet presented in the electrical field.

The encouraging part of all this development is the effect it is having on electrical export trade. A great many American specialties in my line are made abroad

now by branch factories or allied and sub companies, but still the exports are growing rapidly. The journal I edit has noted, for the last two weeks, exports in that period worth \$71,000 to 32 different countries and ports, and this by no means includes accessory machinery or scientific apparatus and other details not grouped specifically as electrical. The electrical exports in October and November were more than twice what they were in the same months of 1897. Only last week the newspapers were full of news about electric automobiles to be sent abroad, but all other lines are just as active, perhaps more so. Our vast home market in this electrical country puts us in the very van of cheapest production for the whole world.

A great deal of money has been expended the last year or two in "independent telephony." Some of it has simply gone down a rat hole. Some of it has been splendidly invested in excellent exchanges and lines, but I do not believe that the low rates of service offered in some places can be maintained. Those companies merely doing business as a charity to the public cannot last, and when the field is weeded of them the next question will be whether the public wants to maintain two or three systems in any given city, no matter how good. Then, if there comes consolidation, how high must rates go to cover the two capitalizations? I have no very definite opinion on the subject, as competitive exchanges are still new in telephony, and we all want the service cheaply.

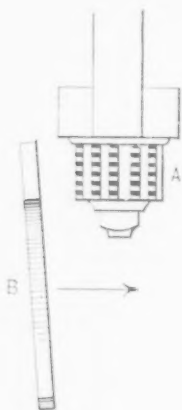


Fig. 14.—Diagram of Tool and Work, Fig. 15.

and Albany and thence to Buffalo? And the trolleys are there or coming. What difference they make in local traffic the steam roads in Connecticut can tell with tears. But it is the function of the steam road to treat these trolleys not as suckers, but as feeders, and then electrify their own main lines, furnishing current to all services alike from power stations along the line.

Longer steam roads crossing unpopulated stretches will still need the steam locomotive, but for roads in densely populated States electricity spells economy, earn-

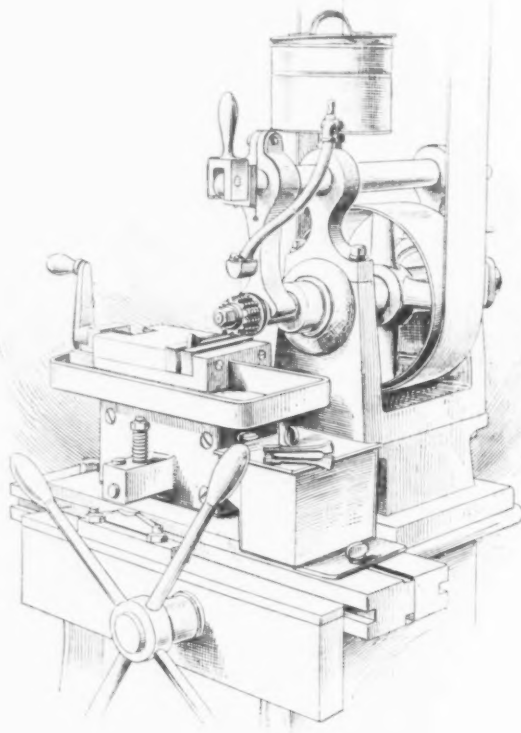


Fig. 15.—Milling the Thread in Jaws.

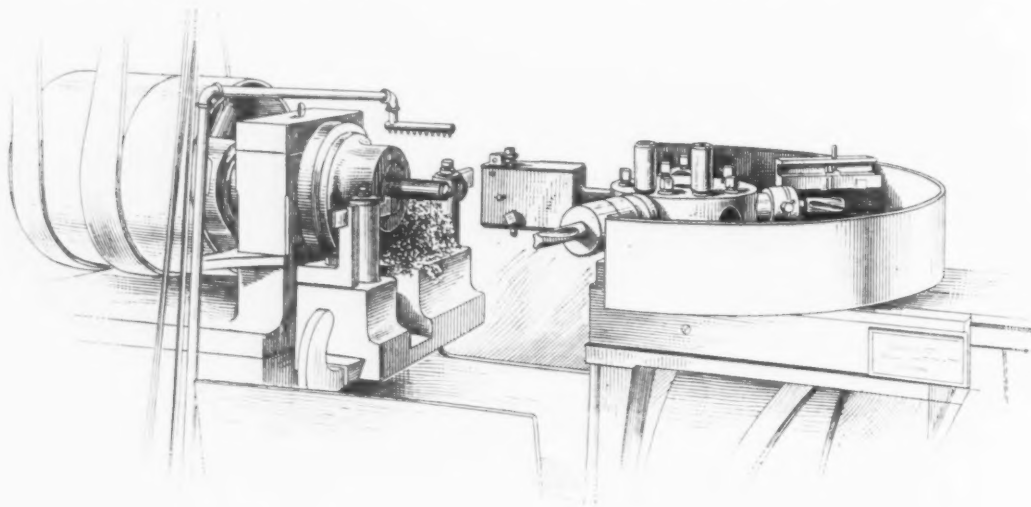


Fig. 16—Making Sleeve of Chuck.

THE MAKING OF A BALL BEARING RATCHET BIT BRACE.

Meanwhile a great extension is going on of private line telephony. Pretty soon every servant will answer the door telephone and not a bell.

Telegraph service is quietly progressive, but we have got to become ocean cable builders. It can all be done in this country. The factories and the talent exist right on our shores at deep water, and all they need is the order. Even now our own Government is in the market for cable, which certainly can be got by it in this country, just as it got other kinds well made, in huge quantities, during the war.

To my way of thinking, there is no better railroad property in the world, as to territory and outlook, than the New York Central, but what would that road do with competing trolleys every foot of the way between here

ing power, service to the public, and the permanent maintenance of good dividends. And this applies not less to systems like the Manhattan Elevated, which, letting "I dare not" wait upon "I would," sees its way traffic disappear and its through traffic threatened by an underground, run with electric current. A short passenger haul that depends on steam is lost forever, no matter how slowly the change works out.

The latest great department of electrical work is long distance power transmission, which affects railroading, mining and many other industries by its ability to deliver the energy of falling water scores of miles from the stream. America is peculiarly favorable to such development, being rivaled perhaps only by Canada and Switzerland. The power and mining department of one of our

big American companies sold in 1897 not less than 85,000 horse-power of such machinery, and a total up to the beginning of that year of 279,000 horse power. Since then the sales have been on an even larger scale. Another company have sold more than 250,000 horse-power of poly-phase power apparatus; and both are now so busy for 1899 they are enlarging their capacity. Other companies are doing considerable work, especially in the complete equipment of mills, factories, shops, docks, iron plants, mines, &c., with motors. The whole face of the machinery world is being changed by this adoption in industrial establishments of motors to drive tools and shafting direct. As to little motors such as those which run fans in our offices in summer, their name is million.

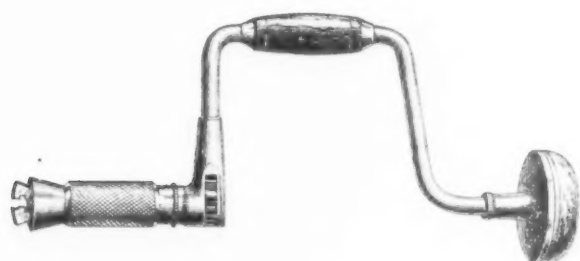


Fig. 18.—A Ball Bearing Ratchet Bit Brace.

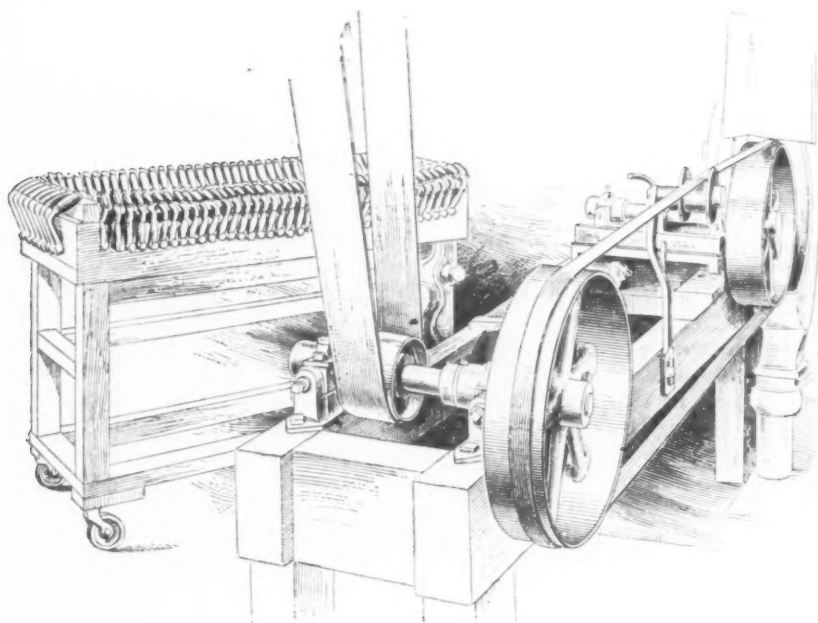


Fig. 17.—Polishing Machine.

THE MAKING OF A BALL BEARING RATCHET BIT BRACE

It will be seen that the electrical outlook is better than it has been at any previous time. The year 1892 was a brisk year, but with a larger market for electrical goods and a wider range of arts, 1899 is destined far to surpass it.

The Central Coal & Coke Company held a meeting at Columbus, Ohio, on Thursday, December 29, to wind up their existence. The organization was composed of the coal carrying and coal mining companies of Ohio, for the purpose of maintaining equitable rates. The competition of West Virginia coal resulted in the disruption. Roads having mines in both States are held responsible in that they could maintain rates and still fill contracts at competitive points with the cheaper coal. It was arranged at the meeting that the mine operators form a new and separate organization. The railroads have an equivalent in the Ohio Coal Traffic Association.

The Guaranty Storage Warrant Company, Calumet Building, Chicago, have for the third time judicially established the validity of storage warrants issued under methods conducted by that company. The case just decided involved the right of a storage company to occupy under lease private elevators, in part or entire, and under proper forms and inspection to receive and maintain possession of grain stored therein. In acceptance of

storage warrants covering property stored in private warehouses or on private grounds the holders by this third decision of the courts are reassured of their validity.

The Illinois Steel Company's Pig Iron.

The Illinois Steel Company, Chicago, have published the following statement of the various kinds of pig iron which they manufacture for the open market:

Bay View Foundry, No. 1 open hearth, strong and clean, suitable for general work; No. 2, strong and clean, suitable for general work; No. 3, suitable for strong castings and miscellaneous foundry work.

Milwaukee Scotch Foundry, Nos. 1 and 2, standard softener, made expressly for fluidity.

Gertrude Foundry, Nos. 1 and 2, ordinary softener.

Union Bessemer for foundry, Nos. 1 and 2, very strong, for best machinery work.

Standard Bessemer, Nos. 1, 2 and 3, suitable for all kinds of Bessemer, open hearth, malleable and car wheel work; Silicon, 1.00 to 2.50 per cent; manganese, 0.30 to 0.80 per cent; phosphorus, 0.06 to 0.10 per cent; sulphur, 0.008 and upward.

Malleable Bessemer, now largely used by the malleable iron works throughout the United States; Silicon, 0.80 to 2.00 per cent.; manganese, 0.50 to 1.50 per cent.; phosphorus, 0.15 to 0.20 per cent.; sulphur, below, 0.05.

Basic open hearth, suitable for the manufacture of basic open hearth steel, with silicon under 1 per cent.

Basic Bessemer: Silicon, 0.30 to 0.80 per cent.; manganese, 1.50 to 2.50 per cent.; phosphorus, 1.75 to 3.00 per cent.; sulphur, 0.05 and under.

Spiegel and Ferromanganese, manufactured as required.

Pickands, Brown & Co., 935 The Rookery, Chicago, are the exclusive sales agents for all the pig iron manufactured by the company for market.

Peter Boyd, manager of the pipe mill of the Riverside Iron Works, at Benwood, W. Va., has perfected a Bell-weld furnace with automatic devices, that reduces the number of employees on each furnace considerably. It is stated that one of these furnaces is in successful operation in the above plant.

The Fischer Equipment Company, 340 Dearborn street, Chicago, manufacturers of electric motor vehicles, are reported to have closed a contract with French buyers to deliver them 500 vehicles yearly for ten years. The vehicles will be of a variety of patterns but of an average cost of \$1,000, according to the newspaper statement.

THE CHICAGO IRON TRADE IN 1898.

BY GEORGE W. COPE, CHICAGO

General Review.

The expectations of extraordinary business with which the year opened were fully realized. The demand for all classes of iron and steel products was very great and at times seemed to tax the capacity of producers. Indications of a shortage frequently appeared. At one time it would be seen in wire rods, at another in steel billets, then in steel rails and again in pig iron. The production of iron and steel in the Chicago district was not equal to the requirements of local consumers, and a larger tonnage of nearly all products was shipped into the district from outside works than in any previous year. Consuming interests which had languished during the panic period awakened to new life, and again became important factors in the prosperity of the district. As far as known, the only branch of the iron business which failed to participate in the general improvement was the architectural iron trade. While a high degree of activity characterized all other lines, the architectural foundries, with a few exceptions, suffered from a dearth of business caused by comparative dullness in the erection of large buildings.

The concurrence of a heavy demand from agricultural implement manufacturers and the railroads is to be credited with the great increase in the consumption of iron and steel. It has frequently happened in recent years that the agricultural interests have shown considerable animation, even while prices of farm products were considered unusually low, but coincidentally the railroads were starving for lack of sufficient traffic and were forced to practice pinching economy, thus keeping the aggregate consumption of iron and steel below the normal and depressing the general iron trade. In 1898 these two great factors were felt as they had never before been felt in drawing supplies of all kinds from the manufacturers of varied materials. During the opening months of the year especially a buoyant feeling was imparted to Western implement makers and Western railroads by the high price of wheat, caused partly by the heavy foreign demand and partly by the famous Leiter wheat deal, which culminated in May. Vast stores of wheat which had been held back by farmers for two or three years were rushed to market to secure the benefit of the high prices. The railroads were thus crowded with traffic and speedily filled their depleted treasuries, while farmers were jubilant at the return of agricultural prosperity and became larger buyers of implements and improved machinery as well as general merchandise. Good crops again rewarded their labors and, while prices fell much below those prevailing during the Leiter corner, the foreign demand has been sufficiently strong to prevent them from receding to the former low level. A notable feature of the heavy demand for agricultural implements and freight cars has been the remarkable stimulus thus given to the malleable castings trade. The malleable foundries have not only been run to their utmost capacity but have greatly enlarged their facilities, some of them trebling and even quadrupling their plants, while new undertakings have been started which at once found plenty of work to justify their conception.

The activity in mining interests of the West, Northwest and Alaska added considerably to the general improvement in business. Gold was produced in larger quantities than ever before, and supplies of all kinds were purchased on a more liberal scale. The non-precious metals brought higher prices than in the previous year and mining operations for them were also stimulated.

The export trade in iron and steel might naturally be expected to more seriously affect the establishments located within a few hundred miles of the seaboard than

those a thousand miles in the interior. Nevertheless, the Chicago district has been a participant in this trade, shipping steel rails wire rods, ship plates, &c., to a number of foreign countries, finding Canada an especially good customer. A large tonnage of ship plates was sent to Glasgow, Scotland, and to Belfast, Ireland. During the season of lake navigation much of this export business finds its way to tidewater via the Great Lakes and the Eastern canals, as favorable rates being secured as from points on Lake Erie.

Notwithstanding the increased traffic on the Western railroads, with such a heavy movement in both directions that shippers have often found it difficult to secure cars enough to meet their requirements, freight rates have not been maintained at full schedules, but considerable irregularity has prevailed. This has often permitted low prices to be made on iron and steel products delivered at consumers' works, and causing an apparent weakness on the part of makers, while they were getting their full rates at mill. The only comment that can be made on this peculiar state of affairs is that the attempted regulation of interstate traffic through a national commission seems to be steadily diminishing in effectiveness. Manufacturers are being generally compelled in defense of their trade to make special arrangements with railroad companies even if repugnant to their convictions of proper methods of doing business.

The remarkable steadiness in prices prevailing during the year is surprising in view of the heavy demand. Fluctuations have been quite narrow, covering a smaller range than is often seen in a period of comparatively light trade. Leading manufacturers have been avowedly conservative, resisting influences which in other years have been potent in advancing prices. Full order books, continuous excellent business, large inquiries, short supplies, consumers clamorous for more rapid deliveries and a magnificent outlook for the future have had little effect in enhancing values, but prices are kept down as well for the belated buyer as for those who aim to be forehanded and buy during their dull season. Over and over again the market in the past year has shown symptoms of hardening under the pressure of heavy trade, only to disappoint those who had predicted a boom and ardently desired one. Greater influences were at work in keeping prices steady than in advancing them. Important consuming interests have grown up which require stable prices on their raw materials by reason of the character of their business, compelling contracts to be made extending far into the future. But the disastrous aftermath of a boom has probably been the strongest reason for the deterrent policy of the leading producers.

It is evident that the values ruling during the year have been fairly satisfactory to the well equipped, well located and well managed concerns. Their costs have been so reduced by improved processes and by better methods of handling materials and utilizing labor that prices which would have been ruinous but a short time since are now remunerative. If this were not the case, the excellent opportunities presented in 1898 for getting much better prices would have been eagerly embraced.

Contrary to all expectation, the Spanish war did not seriously affect business. It undoubtedly checked projected enterprises, inducing caution on the part of those who contemplated entirely new investments. It therefore prevented some expansion in the consumption of iron and steel. But this was not appreciable, because of the legitimate increase in consumption through the prosperous condition of the great industries depending on farming and railroad interests. The danger of a war with Spain

had menaced the country for so long a time that it was well prepared for it, and the business world was rather glad to make the plunge and have done with it decisively, whatever the result might be. The period of suspense was so quickly and gloriously ended that from a Western business standpoint the war was simply an incident of the happenings of the year.

Important events in 1898 were the great consolidations launched, in which Chicago played an important part. The first in order of time was the formation of the American Steel & Wire Company, with a capital of \$24,000,000, taking into one organization about 80 per cent. of the wire producing capacity of the country. Next came the Federal Steel Company, with a capital stock of \$200,000,000, combining under one management the Illinois Steel Company, the Johnson Steel Company, the Minnesota Iron Company and the Elgin, Joliet & Eastern Railway Company, with their affiliated companies. The third great consolidation was that of all but three of the tin plate factories in the country, under the name of the American Tin Plate Company, with a capital of \$50,000,000.

The year was not one of much expansion in the productive capacity of the Chicago district. No blast furnaces were built, and those which had been out of operation for several years continued inactive. The Illinois Steel Company made improvements in their finishing departments, but permitted their Union and North Chicago plants to remain idle. The merchant bar mills at East Chicago, Ind., were purchased and restarted by the Inland Iron & Forge Company, the hoop mills at Peoria, Ill., resumed under the reorganized Peoria Steel & Iron Company, and the sheet mills at Hammond, Ind., were transferred to new owners under the old name of the Corning Steel Company, and again became a factor in the local sheet trade. It may be said of the Chicago district, however, that in general iron and steel products the consumption has rapidly grown in excess of the production and prospects are attractive for considerable expansion, which is likely to be undertaken in the near future.

Review by Months.

Seldom has January opened with brighter prospects. The iron trade had been active through the holiday season. A slight weakness was shown in Southern pig iron, but the local furnaces were so well sold up and orders in sight were so heavy that concessions soon ceased to be made. Railroad business was large, plenty of orders developing for cars, while liberal purchases were made of rails and other track supplies. Plates were active. Billets became very scarce, owing to a succession of accidents in Eastern steel works, bringing inquiries to the Chicago district which could not be even considered, as producers were driving their works to the utmost capacity to meet local requirements. Negotiations to consolidate the wire and wire rod interests drove prices of wire rods upward. The only unfavorable development during the month was the break in the price of charcoal pig iron, following the dissolution of the Superior Charcoal Iron Company, the central selling agency. Heavy sales were made at the lowest prices ever known for this class of iron. A meeting of Western bar iron manufacturers was held in Chicago in the last week of the month to agree upon a higher price, but the effort was unsuccessful and no improvement resulted.

The usual spring demand for wire products maintained the pressure on billets and wire rods in February. Rails were also active, a good demand coming from new electric railroad projects as well as from steam roads for deliveries far in the future. Soft steel bars were firmly held, because of the heavy demand from implement works. Scrap was active, with cast scrap growing particularly scarce. But pig iron developed weakness, owing to the pressure to sell by some Southern producers and notwithstanding the prevalence of a good buying movement. Bar iron was also drooping, in the face of good orders from car builders and other large consumers. Plates lacked firmness, because specifications were being received too slowly on contracts. The destruction of the "Maine" in the harbor of Havana did not improve the market conditions, as it was believed to portend the early breaking out of hostilities with Spain.

An active trade was experienced in March, but general complaint was made of low prices. The leading Southern pig iron producers tried to correct the situation by agreeing on prices, but were unable to accomplish much benefit. The consumption of bars was at a heavier rate than ever before known, compelling the largest local mills to run three eight hour turns daily, yet the market con-

tinued weak. Car builders and implement manufacturers kept pushing for more rapid deliveries. Never before had such orders for plows and other implements been received by manufacturers. Billets and rods continued very scarce, shipments of billets being made to Chicago in large quantities from Eastern works, yet rods were reduced in prices because of offers by middlemen. Plates were sold in unusually heavy quantities, mainly for ships, as the lake shipyards received a number of contracts for vessels. Structural shapes became much more active. A notable sale of steel rails was made to an Alaskan railroad, and the local mills were stated to be practically sold up on standard sections for the entire year. Hardware jobbers enjoyed an immense spring trade. An important event in this month was the organization of the American Steel & Wire Company, with headquarters in Chicago, owning the following properties:

The Consolidated Steel & Wire Company of Chicago, with seven plants, of which two are located at Joliet and one each at St. Louis, Cleveland, Beaver Falls, Allentown, Pittsburgh.

I. L. Ellwood Mfg. Company, De Kalb, Ill.

Ellwood Wire & Nail Company, De Kalb, Ill.

American Wire Nail Company, Anderson, Ind.

Salem Wire Nail Company, Salem, Ill., and Findlay, Ohio.

HP Nail Company, Cleveland, Ohio.

American Wire Company, Cleveland, Ohio.

Heavy transactions in Lake Superior charcoal pig iron were a feature of April business. A surprising demand was also observed for Southern coke iron, while the malleable foundries made large purchases of local Bessemer. The consumption of pig iron at this time was in excess of anything ever before known in the Chicago district. Nevertheless, prices did not advance, and Southern foundry grades sold at \$1 per ton below equivalent Northern irons. Bars were in heavy demand, the car builders being persistent buyers. Implement manufacturers began to sound the market with inquiries for deliveries extending over 12 months. Structural shapes were much more active than in previous months. The new Chicago post office building was let, requiring over 10,000 tons, while numerous smaller buildings came on the market, and bridge work took large quantities of material. The elevation of steam railroad tracks in Chicago was resumed for the season and a great deal of tonnage was figured in this connection. Prices of merchant pipe were advanced moderately, and a heavy demand was precipitated, which continued for weeks. Billets continued scarce, but rods weakened with middlemen offering additional quantities. A phenomenal demand was observed for smooth wire, which extended through the greater part of the year, jobbers having constant trouble to keep their customers supplied. Light rails were active. Low prices were made on thin sheets by mills desiring work. The declaration of war with Spain apparently had but little effect on trade, possibly checking a few car orders and delaying the negotiations of foreign orders for plates and rails.

The bulge in wheat in May created such a buoyant feeling in the West as to almost totally obscure the possibility of financial derangements as a result of the war, and business was transacted on an enormous scale. Consumers of pig iron bought large quantities, prominent among the transactions being a purchase of 30,000 tons of Southern basic by the local steel company. The local furnace companies paid more attention to the malleable trade, leaving the gray iron foundries to the Southern makers and to producers on Lake Erie, who could ship to Chicago by lake at low freight rates. Lake Superior charcoal iron was sold in large blocks to car wheel and malleable foundries. In one week contracts for over 50,000 tons of bars were placed by implement manufacturers for deliveries running through 12 months. The local mills made heavy shipments of cotton ties to the South, their trade for the season doubling that of the previous year. Unusually heavy contracts were placed for sheets. Smooth wire continued extraordinarily active. Steel rails were shipped by the local mills to seven different foreign countries. The demand for structural shapes had seldom been better. The local plate mill secured orders for 5600 tons of plates from shipyards in Scotland and Ireland. Tin plates became scarce as the canning season approached. But prices in very few instances showed any symptoms of hardening. In fact, the large season contracts were taken at almost the lowest prices ever known for such transactions. Wire rods became much easier in price than in the opening months of the year, and the local makers of steel billets were again able to spare some for their neighbor customers.

The war failed to affect business unfavorably in June. Never before had implement manufacturers placed such large contracts as at this time, comprising bars, sheets, plates and special shapes. Car orders were numerous, and their influence was felt in unusual directions. Beams and angles were purchased in large quantities for car trucks, while the tonnage of steel plates bought for the same purpose by the pressed steel works was a revelation of the great possibilities in that direction. Sellers of

structural shapes enjoyed the best business they had known for a long period. Good sales of steel rails were made both for domestic use and for export, but much attractive tonnage was passed because satisfactory deliveries could not be arranged. A sudden advance in spelter caused a flurry in galvanized sheets, but prices did not permanently stiffen. The association of Southern pig iron manufacturers dissolved, and prices declined, but only moderately, as most furnace companies were too well supplied with orders to sharply compete for current business. A strike among furnace workmen at the Milwaukee works of the Illinois Steel Company lasted several weeks and caused considerable inconvenience to large consumers. Outside steel works were again called upon to supply local consumers with steel billets, owing to the oversold condition of the Chicago works. These Eastern works, nevertheless, made extremely low prices on tin plate bars to Indiana factories, lower than had been made for several months.

The special feature of the month of July was the pressure for deliveries of all kinds of material on contracts. The consumption was so heavy that specifications were increased much beyond the agreed deliveries for the month. Consumers of pig iron relaxed in their preferences for certain grades or qualities and often took what they could get. Soft irons became scarce, and prices on these began to harden. New business in pig iron was of a moderate character. In bars, however, further season contracts were placed, but at very low prices, not much if any above those ruling during the depth of the depression. A surprisingly heavy trade continued in plates, while numerous orders were placed for structural shapes. Steel rail manufacturers announced that they were full of work to December 1, with plenty of tonnage offered that could not be handled on account of the deliveries desired. Heavy sales of wire rods were made at the lowest prices of the year. Cut rates of freight to the Far West caused numerous rush orders to be placed for a wide range of products. Anthracite coal dropped to the lowest price made in years in the Chicago market, owing to a fight between the great mining and transportation companies.

The scarcity of steel billets and higher prices realized were the dominating influences in August. The Joliet Works had been idle from July 1 pending the annual wages settlement, which was not accomplished until the middle of August. This made a heavy reduction in the Western steel supply, causing higher prices to be asked for merchant bar steel, sheets, tin plate, &c. Heavy sales of structural shapes were made and prices were advanced \$1 a ton. Bar iron was in active demand at better figures than in July, and for a time sold up to the price of soft steel bars, but before the end of the month they parted company, steel ruling higher. Great activity was experienced in merchant pipe. Pittsburgh manufacturers of plates began to withdraw quotations from this market because of rapid accumulations of orders on their books. Wire rods were scarce and made some advance in price. Important sales of steel rails were made for home consumption and for export, to be delivered late in the year. A beginning was also made this month in the placing of orders for rails to be rolled during the winter, the initial order calling for 25,000 tons. The demand for light sections of steel rails was an interesting feature of the rail trade. The tin plate trade became excited, owing to the advance in the cost of steel and the placing of large orders by jobbers and consuming interests. The pig iron market showed much animation, Southern manufacturers advancing prices 25 cents per ton on all grades. The consolidation of the great properties of the Illinois Steel Company, the Johnson Steel Company, the Minnesota Iron Company and the Elgin, Joliet & Eastern Railway Company was effected under the name of the Federal Steel Company.

A heavy demand for steel billets was a prominent feature of trade in September, running far beyond the capacity of the local steel works. A large tin plate company in Indiana bought 30,000 tons of tin plate bars from Eastern mills. In spite of heavy car orders bar iron weakened in price, attributed to pressure for business by Indiana manufacturers. Makers of soft steel bars endeavored to fix a minimum of 1.20 cents and to shorten terms to 30 days, but the movement was not a success. The plate jobbers were considerably benefited by the crowded condition of the plate mills, which threw much business into the hands of the former. The structural trade was very active, large contracts being placed. Sales of wire rods were made for export. Unusually heavy shipments of pig iron were made by all interests supplying the Chicago district. The output of local iron was curtailed by the blowing out for repairs of the Iroquois furnace. The leading Southern company marked up prices 25 cents per ton. Merchant pipe was advanced by changes in base discounts, but although an active trade ensued the jobbers were so well stocked that they kept prices down. Sheets also advanced with a lively market, and some houses reported the heaviest sales of galvanized sheets in their history. An advance was likewise made in steel shafting. Manufacturers of stoves and ranges marked up their prices 5 per cent., having had a heavy

trade in July and August. The agreement which had existed between Western steel rail manufacturers was broken on account of contracts taken at lower than the agreed price, but a conference of all the steel rail companies was held to perfect another agreement and prices were withdrawn pending its adjustment. The tin plate manufacturers began negotiations to effect a consolidation of all the tin plate factories.

The heavy demand by railroad companies for cars and other equipment attracted marked attention in October. Car builders made large purchases of material, and makers of car wheels and car trucks were also steady buyers. An excellent business was done in all kinds of pig iron. Soft irons continued very scarce, and irregularity in prices gradually gave way to a better tone and more uniform quotations among Southern furnace companies. A scarcity of cars as well as a shortage in desirable grades of iron harassed consumers. The Iroquois furnace resumed operations, securing satisfactory orders for immediate shipment. The plate mills received foreign inquiries, but were too well supplied with domestic orders to consider them. Stocks of merchant pipe were broken by the heavy demand from consumers, particularly the heating trade, and the mills fell far behind on deliveries. Sheets continued in good demand. No prices were quoted on standard sections of steel rails during the month, manufacturers continuing their negotiations regarding prices. The dissolution of the hoop combination precipitated lower values in that line. The delay in effecting a consolidation of the tin plate factories caused weaker prices, and sales of carload lots of 100-pound bright coke plates were made at \$2.70 Chicago. Old material which had done much better in the previous months of the year than in the corresponding period of 1897, became somewhat stagnant, fall trade being a disappointment to dealers. Sales of large quantities of muck bars were made by Eastern bar iron manufacturers to consumers in the Chicago district to supply a higher grade of iron demanded for railroad work.

Manufacturers' operations were badly hampered in November by the shortage of cars. Railroad traffic was enormous, all lines carrying much freight both ways, and making great gains in net earnings. The iron trade improved steadily in volume during the month. Northern and Southern furnace companies made large sales of pig iron and stocks at Southern furnaces were reported to be running low even in off grades. Foundries bought pig iron in notable instances to make up for the short supply of cast scrap. Bars were active at low prices, thousands of tons being bought by car builders, while other consumers were also liberal purchasers. A stronger demand sprung up for plates, mainly from lake ship yards, to be used in building vessels during the winter. A sharp advance in pig tin compelled an advance in tin plate. The certainty of the tin plate consolidation caused jobbers to make heavy purchases in order to have ample stocks on hand if prices were advanced after the control of the trade passed into one company. The Chicago Stock Exchange began to trade in the stock of the consolidated company "when issued," and allotments of stock sold first at a premium of 5 per cent. and then rose to 20 per cent. The hardware jobbers reported an unusually heavy fall trade. Stove manufacturers also enjoyed a large business, far ahead of the previous year. The high price of spelter stiffened the quotations on galvanized sheets, but black sheets weakened under sharp competition for light business. The local steel works bought billets from outside manufacturers to help supply their trade. The steel rail manufacturers enjoyed a steady business in light rails, but in the last week of the month decided that no agreement could be made on the price of heavy sections and booked enormous orders at prices attractive to the railroads. The announcement was then made that Western manufacturers had decided to take further business at \$17 Pittsburgh, \$18 Chicago and \$20 Pueblo. The American Steel & Wire Company absorbed the McMullen Fence Company, the largest manufacturers of poultry netting in the world.

December was a record breaker in volume of business, in which the reputation of the year was preserved for conservatism in prices. Transactions in pig iron were on an enormous scale, not by reason of heavy single contracts, but in the aggregate of tonnage purchased by numerous buyers. Another advance of 25 cents per ton was made by Southern furnacemen. Extensive purchases of all classes of material were made by car builders, the leading car shops having their capacity engaged for six to eight months of the coming year. Railroad companies continued to place orders for steel rails, and although competition from Eastern mills was felt on large orders, an advance of \$1 per ton was made on lots running up to 2000 tons. The demand for steel billets continued above the capacity of the local steel works, while the wire rod market showed symptoms of approaching scarcity. The lake shipyards bought large quantities of plates, and manufacturers of car specialties also drew heavily on the facilities of the plate mills, bringing about an advance of at least \$1 per ton. The demand for structural material

was remarkably active for the season. The consolidation of the tin plate factories was successfully accomplished under the name of the American Tin Plate Company, with headquarters in Chicago, which was accompanied by great activity in speculation in the company's stock on the local stock exchange, establishing a remarkably high price for the stock of a new corporation. The wire trade was also excited by the announcement that the American Steel & Wire Company had purchased the Cincinnati Barbed Wire Fence Company, large manufacturers of nails and wire, and that negotiations were rapidly approaching a successful conclusion for the purchase of other wire companies. The stock of this company rose considerably and the price of all wire products advanced under heavy buying by large distributors. An active demand sprung up for all kinds of old material, large transactions occurring in old iron rails and wrought scrap.

Tables of Prices.

A review of the leading features of the trade during the year would not be complete without at least a partial record of the prices prevailing.

Pig Iron.—The course of prices on some leading grades during the past nine years is shown in the following table of prices at Chicago, averaged from quotations in our weekly trade report:

Months.	Local coke No. 1.	Lake Superior charcoal.	Ohio strong soft No. 1.	Southern coke No. 2.
January.....	\$11.50	\$12.50	\$12.00	\$10.35
February.....	11.50	11.50	12.00	10.35
March.....	11.50	11.50	12.00	10.35
April.....	11.50	11.50	12.00	10.35
May.....	11.50	11.50	12.00	10.35
June.....	11.50	11.50	12.00	10.20
July.....	11.50	11.50	12.00	10.10
August.....	11.50	11.50	12.00	10.30
September.....	11.50	11.50	12.00	10.60
October.....	11.50	11.50	12.00	10.60
November.....	11.50	11.50	12.00	10.60
December.....	11.50	11.50	12.00	10.95
Average for year...	\$11.50	\$11.60	\$12.00	\$10.45
Average for 1897.....	\$11.10	\$13.00	\$12.25	\$10.25
Average for 1896.....	12.20	13.62½	14.50	11.40
Average for 1895.....	12.25	13.75	14.25	11.75
Average for 1894.....	11.25	14.75	13.50	10.75
Average for 1893.....	13.75	16.12½	16.00	12.75
Average for 1892.....	14.50	16.75	16.75	14.10
Average for 1891.....	15.50	17.37½	18.00	15.00
Average for 1890.....	17.50	20.75	20.00	15.25

Finished Iron and Steel.—The following table shows the course of prices for the past nine years on several kinds of finished iron and steel, averaged from our quotations on mill shipments, Chicago delivery:

Months.	Common bar iron. Cents.	Soft steel bars. Cents.	No. 27 comm'n sheets. Cents.	Angles. Cents.	Smooth machinery steel. Cents.	Open hearth spring. Cents.
January.....	1.05	1.15	2.10	1.30	1.60	1.85
February.....	1.05	1.15	2.07½	1.15	1.60	1.85
March.....	1.05	1.12½	2.05	1.15	1.60	1.60
April.....	1.07½	1.10	2.00	1.30	1.60	1.60
May.....	1.10	1.07½	2.05	1.25	1.50	1.60
June.....	1.12½	1.05	1.95	1.20	1.50	1.60
July.....	1.02½	1.07½	1.95	1.20	1.50	1.60
August.....	1.05	1.10	2.00	1.30	1.50	1.60
September.....	1.05	1.15	2.05	1.30	1.55	1.60
October.....	1.05	1.12½	2.00	1.30	1.55	1.60
November.....	1.02½	1.10	2.00	1.30	1.55	1.60
December.....	1.05	1.10	1.95	1.30	1.55	1.60
Average for year.....	1.05	1.10	2.02½	1.25	1.55	1.61
Average for 1897.....	1.11½	1.13	2.07	1.19	1.53	1.66½
Average for 1896.....	1.30	1.28	1.40	1.62½	1.70	1.77½
Average for 1895.....	1.25	1.37½	2.50	1.50	1.70	1.85
Average for 1894.....	1.10	1.25	2.40	1.40	1.70	1.85
Average for 1893.....	1.47½	1.60	2.22½	1.82½	2.00	2.05
Average for 1892.....	1.62½	1.75	2.00	1.97½	2.11	2.09
Average for 1891.....	1.70	.....	2.95	2.17	2.32	2.40
Average for 1890.....	1.82	.....	3.17	2.37½	2.70	2.75

Steel Rails.—Quotations ranged from \$20 on large lots to \$22.50 on small quantities from the opening of the year until September, when the cordial relations existing between the Western rail manufacturers was broken by sales made at \$18. Prices were immediately afterward withdrawn pending negotiations for an agreement on terms, and no quotations were made until late in November, when manufacturers took business on an independent basis, subsequently announcing that Western mills had agreed to maintain the rate of \$18, Chicago, which continued to be quoted on large lots in December. The new year opens with a very large tonnage booked by the local mills, and the pressure for delivery even during the winter months so strong that but a very short stoppage has been permitted for repairs. The mills have now been in almost continuous operation at maximum capacity for two years and every prospect for a third year, which is unprecedented in the history of the rail trade. The demand for light rails, of sections under 45 pounds, was never before so great as in 1898. A large export business was done in both light and heavy sections. The average price ruling during the year for heavy sections may be put at \$19, against \$19 for 1897, \$29 in 1896, \$25.50 in 1895

\$25 in 1894, \$29.50 in 1893, \$31.17 in 1892, \$31 in 1891 and \$34.50 in 1890.

Steel Billets.—The following table gives the fluctuations in billet prices at mill near Chicago in the past four years:

Months.	1897.	1896.	1897.	1898.
January.....	\$16.50	\$18.50	\$18.00	\$17.50
February.....	16.50	20.00	17.50	17.50
March.....	16.50	19.50	18.00	17.50
April.....	17.00	21.25	16.50	17.25
May.....	19.50	21.25	16.50	16.50
June.....	20.00	21.25	16.00	16.25
July.....	22.00	21.25	15.00	16.00
August.....	23.00	21.25	15.75	16.25
September.....	26.00	21.25	16.75	17.25
October.....	26.00	21.25	18.00	17.00
November.....	No sales.	21.25	18.00	17.00
December.....	No sales.	21.25	17.50	17.25
Average for year.....	\$30.35	\$20.00	\$17.12½	\$16.95

Wire Rods.—The range of prices of wire rods at mill near Chicago in the past four years is exhibited in the following table:

Months.	1895.	1896.	1897.	1898.
January.....	\$23.00	\$26.50	\$24.25	\$26.25
February.....	23.00	27.50	24.00	25.25
March.....	23.00	26.75	24.00	24.75
April.....	23.00	30.00	23.00	22.75
May.....	26.00	29.50	22.50	22.75
June.....	26.00	27.50	22.00	22.25
July.....	27.00	27.50	21.00	21.25
August.....	31.00	27.50	21.00	21.50
September.....	34.00	27.00	24.00	22.50
October.....	34.00	27.00	20.00	22.50
November.....	No sales.	27.00	25.00	22.50
December.....	No sales.	27.50	25.00	22.50
Average for year.....	\$27.00	\$26.75	\$23.50	\$23.00

Old Material.—An excellent business favored dealers in scrap stock for the first eight months of the year, followed by stagnation until December, when a renewed demand was experienced. The course of prices at Chicago on leading varieties in the last nine years is shown in the following table, averaged from weekly quotations:

Months.	Old iron rails. Gross ton.	No. 1 railroad wrought. Net ton.	No. 1 mill scrap. Net ton.	Cast scrap. Net ton.
January.....	\$12.25	\$11.50	\$6.50	\$7.50
February.....	12.25	11.75	6.75	8.25
March.....	12.00	11.50	7.00	8.00
April.....	12.00	11.50	7.00	8.50
May.....	12.25	11.50	6.50	8.75
June.....	12.37½	10.75	6.50	8.00
July.....	12.50	10.50	6.50	7.75
August.....	12.50	10.50	6.50	8.00
September.....	12.62½	10.75	6.62½	8.25
October.....	12.75	11.25	6.75	8.25
November.....	12.75	11.50	6.75	8.25
December.....	12.50	11.75	6.75	8.25
Average for year.....	\$12.37½	\$11.25	\$6.62½	\$8.15
Average for 1897.....	11.67	10.00	6.44	7.25
Average for 1896.....	13.50	11.20	7.00	8.48
Average for 1895.....	14.12½	11.08	7.97	8.37½
Average for 1894.....	10.83	8.80	6.85	7.50
Average for 1893.....	16.25	12.75	9.25	10.00
Average for 1892.....	19.10	15.75	11.17	11.66
Average for 1891.....	22.75	18.35	13.75	12.25
Average for 1890.....	25.00	19.75	15.62	13.37½

The fluctuations in the price of old car wheels were narrow, quotations ranging from \$11 to \$11.50 per gross ton in January, ruling steady at \$11.50 in February, declined to \$10.75 late in March, firmed up to \$11.50 in April, sold at \$11 in September, advanced to \$11.25 in October, stiffened to \$11.50 in November and maintained the same rate in December.

Heavy melting steel scrap sold at \$7.50 from the beginning of the year until April, when it stiffened to \$8, falling to \$7.50 in August, ranging from \$7 to \$7.75 in October, and holding steadily at the higher rate for the remainder of the year.

Conclusion.

Few years have ever opened so auspiciously for the iron trade as 1899. All business conditions are of such a favorable character, and the consumption of iron and steel is on such an enormous scale, that the highest hopes of a splendid year are justified. It has been said that no one has ever been able to even approximately estimate the consuming power of the American people when sound business conditions have succeeded a long period of enforced economy. No other people have such a ravenous appetite for iron and steel when they have the means with which to gratify it. As far as the finite mind can foresee, the demand for iron and steel will this year make a new record much ahead of anything ever known.

Dilworth, Porter & Co., Limited, of Pittsburgh have recently put on the market a new tie plate for which some advantages are claimed. It is stated that this has a greater bearing surface than any tie plate on the market, being made in different sizes from 3-16 to ¾ inch thick, and from 6 inches to 4½ inches long and 4½ inches in width. It is also made with due regard to switch leads, frogs, guard rails, crossings and gauntlets.

The Coal Hoists of the Calumet & Hecla Mining Company.*

The paper by Julius Kahn, Jr., which formed part of the Proceedings of the American Society of Civil Engineers for December, 1898, is an admirable and complete description of the coal hoists of the Calumet & Hecla Mining Company. The author states that he has been unable to find in the Transactions of the society any

All coal is received from freight vessels at the docks in Lake Linden, and is hoisted there and conveyed into the coal storage sheds. It is carried from Lake Linden to the mines at Calumet by rail. The cars, entering passages provided for them in the sides of the sheds, are filled by special loading devices. The coal carrying vessels from Buffalo to the upper peninsula have an average capacity of from 1200 to 1400 tons. They have usually five hatches, each about 8 x 12 feet, and at 24-foot centers.

The coal most commonly used is of the grades known

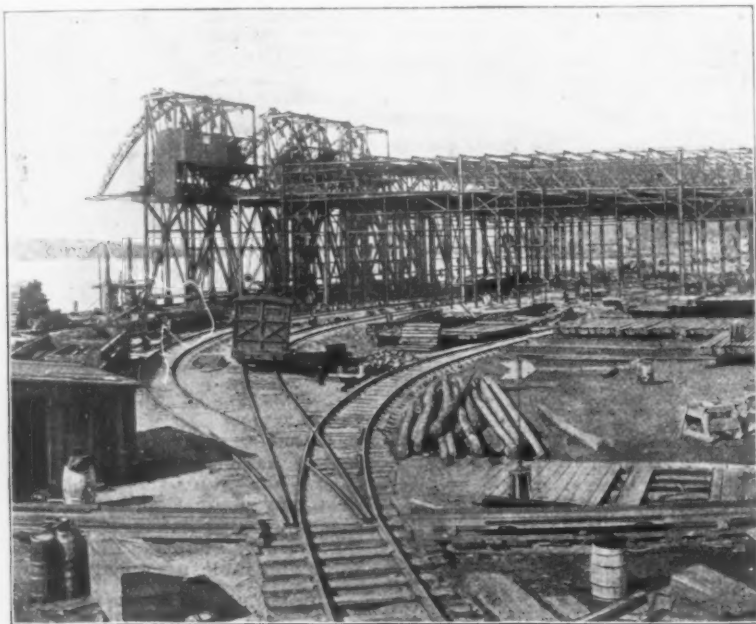


Fig 1.—Side View of Towers and Shed Taken During Erection

paper which has dwelt on the subject of coal handling machinery and he therefore presents an account of the plant which was erected during the months of June and July, 1898, at Lake Linden, Mich.

Location of Plants.

The Calumet & Hecla mines are located on a peninsula, known as Kewenaw Point, and extending into

as Youghiogheny and Pocahontas of Pennsylvania and the Soldiers' Run of Virginia, all of which are large lump bituminous coals. There is also received a small quantity of anthracite, which serves for the domestic use of the workmen.

In 1894 the coal received by the company amounted to 225,420 tons; in 1895, 175,162 tons; in 1896, 207,000 tons; in 1897, 178,800 tons, and in 1898, 285,000 tons.

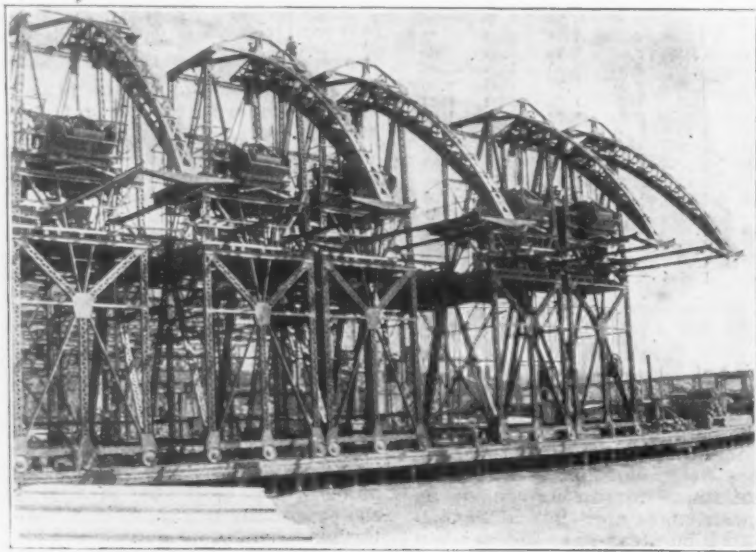


Fig 2.—Front View of Towers.

THE COAL HOISTS OF THE CALUMET & HECLA MINING COMPANY.

Lake Superior. The smelting works and coal docks of the company are at Lake Linden, a small town situated on an inlet of Lake Superior; the mines are at Red Jacket and Calumet, Mich., two towns about 6 miles from Lake Linden.

* Abstract of paper presented at the meeting of the American Society of Civil Engineers, January 4, 1899.

It can, of course, be easily appreciated that even the slightest saving per ton for unloading this enormous quantity of coal from the boats and conveying it to the coal sheds must amount to a large sum yearly, and, at a low rate of interest, must warrant a very large investment. Coal hoisting with a steam shovel plant of this character, which takes the material from the hold of

the vessel and delivers it into the storage sheds, is done at a possible cost of between 1 and 3 cents per ton. The same work done by stevedores would probably cost from 25 to 33 cents per ton.

The reasons for storing this immense quantity of coal are, primarily, to carry the works through a winter's demand, lake transportation being closed during this season; secondly, the company have found it necessary to make themselves absolutely independent of possible accidents in the coal supply, caused by mine strikes and price fluctuations, and to do this have erected the steel framed coal shed shown in Fig. 1, 648 x 295 feet, to be used for storage or as a reservoir to be drawn upon in case any of the before named causes make the supply less than the demand. The hoisting towers and automatic railways, which are used for unloading the coal from the vessels and carrying it into the sheds, are the subject of the paper.

The Towers.

The towers have been reduced to great simplicity in their general design, and the individual members have been so placed that the theoretical strains are transmitted almost directly to the foundations. The rear

heavily trussed in a horizontal plane and the rear elevation shows them to be trussed in a vertical plane. The truss under the engine floor takes up the load of the engine and the varying upward and downward pulls of the shovel chains. The horizontal truss under the floor receives the horizontal component of the hoisting chain pull, and carries it into the tower proper.

The Booms.

The boom is a heavily trussed structure, of a peculiar shape, the top chord being the arc of a circle of 64 feet radius and the bottom chord approximately a parabolic segment. It is made up of two trusses, connected together by angles and plates in the plane of the top chord, and by bracing between the webs.

The boom truck, containing the sheaves for the shovel chains, moves between the trusses, the flanges of the bottom chord acting as guides and rails. A chock block is used for arresting its downward travel. This is operated by a counterweight of its own, and automatically adjusts itself to different positions along the boom from which it may be desired to do hoisting.

A similar chock block at the upper end of the boom

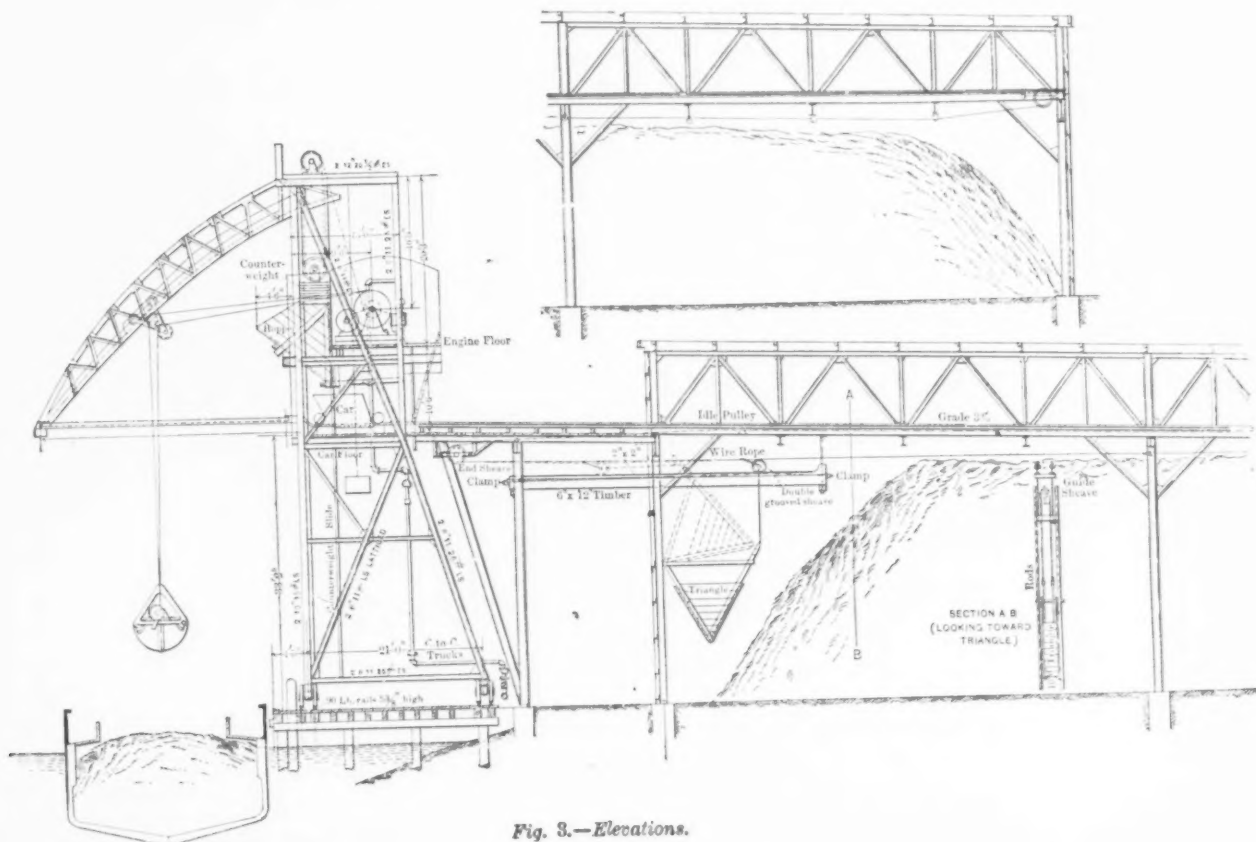


Fig. 3.—Elevations.

THE COAL HOISTS OF THE CALUMET & HECLA MINING COMPANY.

posts have been battered to enlarge the base and increase the stability of the structures. It was impossible to increase the width of the towers beyond that shown in the front elevation, Fig. 4, the distance between centers of the automatic railways being given as 24 feet, which it was not allowable to exceed. Each tower is mounted on five pairs of heavy wheels, is capable of being moved anywhere along the wharf, so that hoisting can be done from any one of the different hatches in a vessel, and if necessary all towers can be at work at one vessel at the same time. As the building in the rear contains 27 automatic railway tracks, and as any one of the towers is apt to unload on any one of the tracks, the extreme distance moved along the wharf is 648 feet.

The side elevation, Fig. 3, shows two floors, the upper one being used as the engine floor and the lower one as the car floor. On the upper floor is the receiving hopper and the hoisting engine; the latter is a 12 x 14 inch engine, with double drum and double cylinder, fitted with a steam brake, a steam reversing cylinder, an emergency brake and a counterweight spool. Its drums are so constructed that the chains, which are laminated, wind upon themselves in a vertical plane; the reasons for this will be evident from the description of the boom given later. The car floor contains the scale platform and the automatic car, the latter being stationed directly under a trap door in the hopper.

The plans of these floors, Fig. 4, show them to be

stops the truck directly above the hopper, and holds the same by a projecting hook when the truck is not in use.

At the further end the boom is connected to the cross bar by means of a vertical pin, and transmits its horizontal stress into the same; the cross bar is again connected by vertical pins with the horizontal braces. At its upper end the boom is suspended from the top hip truss, which is carried on cantilevered beams from the tower. This connection is also made with a large vertical pin.

When hoisting is being done the boom stands out at right angles to the front of the tower, and is held in this position by two guy lines attached to its sides. When not in use it is swung around horizontally, approaching as nearly as possible to the face of the tower, thus allowing boats with high masts to move along the wharf.

The bottom chord of the boom was so designed that the resultants of the forces, when hoisting is being done at any point, are always normal to the track or bottom chord, a certain factor of safety or extra declivity being allowed for. The resultant stress on the truck, being always in such a direction as to press it normally against the tracks, it has no tendency to run up the boom while the shovel is suspended from it. When the shovel reaches the truck it bears on a suspended arm of the latter, and the chain now pulls both truck and shovel toward the tower and over the hopper, where the shovel is allowed to dump itself.

With this scheme of hoisting, where the shovel chains merely pass over the sheaves in the truck, it is of course easily seen that if the curve is not theoretically correct, and possesses a certain factor of safety, there is a tendency to slide the same either up or down the boom as soon as a pull comes on the chain.

Operation of the Hoist.

The engineer is stationed at his operating stand at the front of the tower, as shown in Fig. 7, where he can at all times watch the shovel. He controls the throttle valve with a foot lever; the reversing gear is operated by a steam valve on his right, and the brake band by a steam valve on his left. There is also an emergency hand brake on his right. Two chains are used for operating the shovel, the hoisting and holding chains, both of them being of a laminated type, made up of ten links.

Beginning with the empty shovel supported over the coal in the boat, the engineer sets his steam brake and supports the shovel on the holding chain. He then moves his reversing lever and allows the hoisting chain to become slack, the shovel opening by its own weight. As soon as the shovel has entirely opened, the engineer frees the brake band, and, with the engine reversed, allows the shovel to fall into the coal pile from a small height. The shovel by its own weight buries itself in the coal. The engineer, having the brake band set so that the holding chain drum is fixed, allows his engine to run forward and raise the hoisting chain. The scoops

pend in carrying it to the dumping point. The car, therefore, when it arrives there is at a momentary standstill; its sides during the last few feet of motion have engaged the trip block and are caused to fly open.

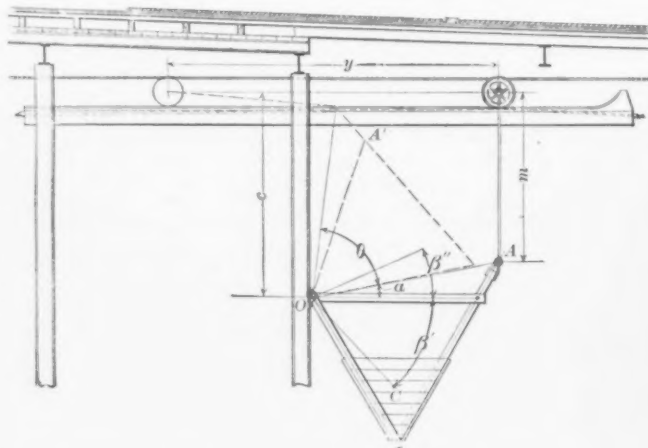


Fig 5.—Diagram of Motion of Automatic Railway Triangle.

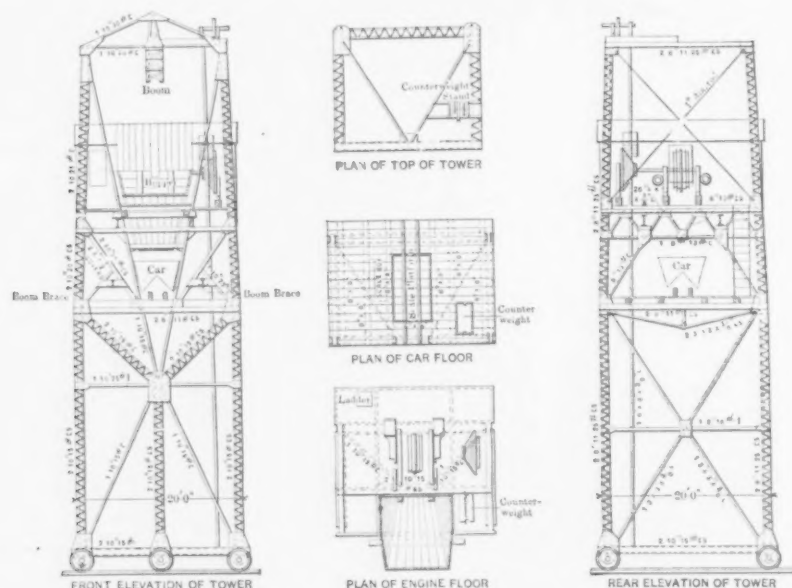


Fig 4.—Plans and Elevations of Towers.

THE COAL HOISTS OF THE CALUMET & HECLA MINING COMPANY.

are thus forced together without exerting any tendency to lift the shovel out of the coal. As soon as the shovel is closed the engineer frees the brake band of the holding chain drum and raises the shovel by both the holding and hoisting chains, slowing up a little as it approaches the boom, and from this point the shovel moves with the truck to the hopper. The engine is then stopped, and the shovel is suspended with the holding chain. The engine is reversed, which allows the hoisting chain to become slack, and causes the shovel to open and unload itself into the hopper. The shovel is again closed by winding up the hoisting chain; the brake band is released; the engine again reversed, and the shovel is allowed to descend the boom and into the vessel.

It requires about 50 seconds to make one trip, and 2 tons are hoisted each time.

A man standing on the car floor below operates the trap door in the back of the hopper, and allows the coal to flow into the automatic car, which is stationed on the scale platform. He weighs the coal, and gives the car a slight push to start it down the incline of the automatic railway. It rushes along until at a certain point in its journey it strikes the cross bar, a strong oak frame laid across the track and connected by wire ropes with a triangular weight. The car picks up the cross bar and drags it along, thereby raising the weight. Gradually, as the weight is raised, the energy of motion contained in the loaded car is transformed into the potential energy of the raised triangle. The cross bar is located at such a distance before the point of dumping that this energy of the loaded car has been entirely ex-

The coal is thus allowed to fall vertically into the shed, without any other component of force than that due to its height of fall, and this insures the least possible breakage of coal.

The car being empty, the raised triangle, possessing the energy of the loaded car, now descends, and forces back the cross bar, thus giving the car an impulse sufficient to carry it back to the platform in the tower. All this work is done in a very short time, the car running down the grade with a constantly accelerated velocity, and returning with a constantly retarded velocity due to gravity.

Automatic railways of this character have been in operation for many years, especially where coal conveying is done to any extent. The entire arrangement works speedily, costs absolutely nothing for operating expense, is easily constructed, and has no delicate parts to be easily put out of order. A special and interesting feature of its mechanism is the device used to gradually retard the rapid descent of the car, changing its forward motion into a backward motion and giving just enough momentum to carry the car to the starting point.

The working of the triangle offers a very interesting mathematical study, in so far that its action is not the same as that of a falling weight; that its effective pull is of a varying nature, greatest and least at those points where it is most desirable to have it so, and that it receives and imparts great velocity with scarcely any shock or vibration.

A triangular weight is shown in Fig. 5, suspended from a double grooved sheave which travels back and

forth on a 6x12 inch timber track. The rope leads from the cross bar, in one direction over a sheave at the end of the track, returns below the track to the triangle sheave, leads half way over this, and is fastened to the end of the track timber pointing toward the rear of the shed. Leading in the other direction from the cross bar, it passes around the other end sheave, returns below to the triangle sheave, takes a half turn about this and is fastened to the other end of the timber. It will be

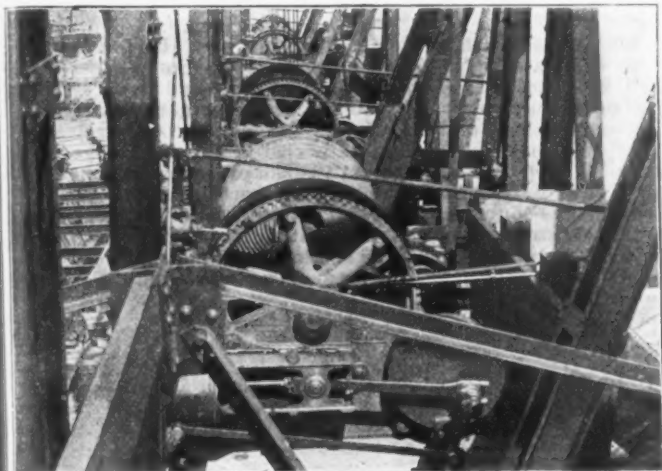


Fig 6.—Engine Floors of Towers Before Inclosure.

noticed that at the instant when the car strikes the cross bar, at which time its momentum is greatest, the triangle sheave is directly above one end of the triangle, and the force required to move it a very short distance is theoretically zero if friction were neglected. As the cross bar travels with the car, the triangle sheave is drawn forward along the timber track and the triangle is raised, its effective weight increasing by a variable quantity. The car is thus gradually brought to a stop, at which instant the coal drops into the shed; then the backward push of the cross bar on the car takes place, and from the entire effective weight of the triangle the backward push is gradually retarded, until the sheave is again directly over one end of the triangle, when it is reduced to nothing. As the backward push, however, is being retarded, the velocity of the triangle sheave and consequently that of the car is being increased; and at that point where the effective push of the triangle reduces to zero the sheave velocity is at its maximum.

There is in the triangle and cross bar a mechanism very nearly identical in its rebounding effect with that of the bow and arrow. At the instant when the bow string is released the component of string tension pressing on the end of the arrow is very large, and as this component decreases the transverse velocity of the string increases until at that point where the string is straight its effective push is zero. Its velocity, however, is at a maximum, and is infinite as compared with the ends of the bow.

The author then discusses, mathematically, the action of the triangle and its weight, and the results obtained by its use.

Construction of Boom.

The construction of the boom represents a rather uncommon and decidedly interesting problem. The 2-ton steam shovel booms are made in three different standard lengths, so that hoisting may be done at a maximum projection of 20, 24 or 28 feet. The curve of the bottom chords is in all cases the same; the top chords are varied by making them arcs of circles of different radii. The booms of the plant described herein were of 28 feet projection.

The shovel weighs approximately 6000 pounds, the coal 4000 pounds and the boom truck 2000 pounds, making a total vertical load of 12,000 pounds. The chain pull is 10,000 pounds. If the weight of the boom truck could be neglected the total downward force would at all times be equal to the pull of the chain, and if the direction of the chain from the truck to the engine were always toward a certain point, which has been assumed as the focus, the sides of the parallelogram of forces would always be equal, and the curve normal to the resultants would be a true parabola, having its vertex approximately 12 feet above the focus. This follows from the property of the parabola that the normal to the curve at any point will always bisect the angle in-

cluded between the focal chord through that point and a line parallel to the axis of the parabola.

In the construction of these boom curves the chain was assumed to lead from the fixed point on the engine called the focus. This, although not theoretically exact, is sufficiently accurate for practical purposes. To have assumed the focus for each possible tangent position of the chain on the drum would have made the problem much more complicated, and would have affected the final resulting curve very little.

If the vertical force exceeds the inward pull by 2000 pounds, the weight of the truck, and if the curve is constructed so that it is at all points normal to this resultant, it will vary from the parabola, and the result will be the limit curve for 10,000 pounds pull and 12,000 pounds vertical load. Since these resultants are more nearly vertical than the resultants for the parabolic curve, the 12,000 pounds limit curve, being normal to them, more nearly approaches the horizontal direction. This curve then represents the true theoretical curve, and if the focus is constant, as has already been assumed, the boom truck will be in an exact state of equilibrium during hoisting, neither rising nor falling, but being just on the point of balance.

The booms as actually constructed are made according to a third curve, about one-third of the distance between the 12,000 pounds limit curve and the true parabola. In the third curve, the vertical loads are of a varying value. The curve is so constructed, or rather the vertical loads have been so modified, as to take into account the friction of the truck, allowing it to run down readily of its own accord from its highest position when dumping above the hopper. At all other positions of the truck a certain factor of safety exists whereby a small weight is left to rest on the lower boom chock block.

This overcomes the possibility of the truck sliding in

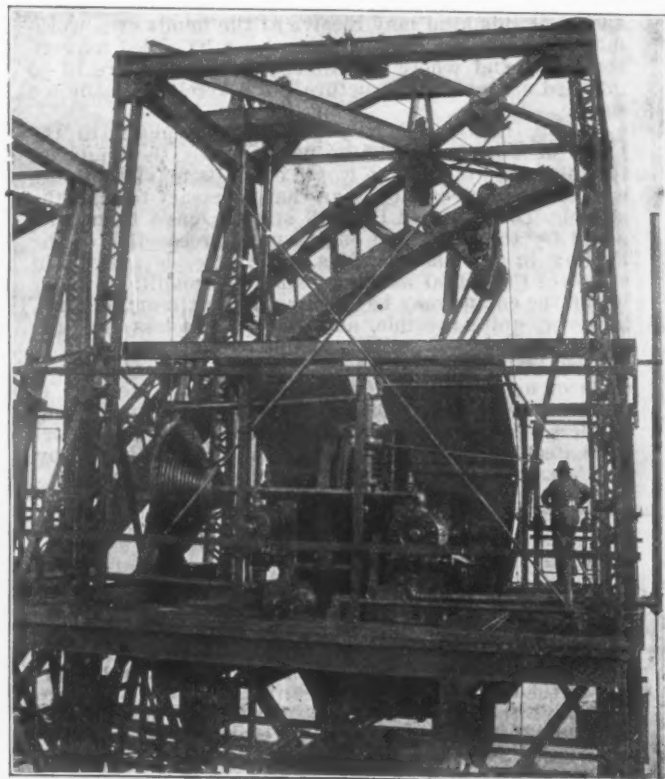


Fig. 7—Engine Floor of One of the Towers with Engineer at His Post.

THE COAL HOISTS OF THE CALUMET & HECLA MINING COMPANY

too freely with the shovel toward the hopper, as a certain remaining downward force keeps the hoisting chain taut during this part of the shovel travel.

The entire curve is somewhat less inclined than the parabola, and more inclined than the true theoretical curve. A curve has been constructed for which the rolling truck friction has been considered, and where a factor of safety is given to the travel of the shovel throughout.

There is another interesting feature about the construction of this curve. Assume, for example, that the

shovel is held accidentally in the hatch of the boat, say, by a projecting bolt, or through carelessness of the workmen, or otherwise. In this case the engine may pull its maximum amount, which is 20,000 pounds, the vertical load will be 20,000 plus the truck weight; and since the resultant of this force parallelogram is less vertical than the resultant of the 10,000-11,500 pounds limit curve, or the newly assumed curve, at this point, it has a component in the direction of the track, and the truck will slide a short distance up the boom, which, when noticed by the engineer, warns him to check the engine. There has been allowed in the curve, therefore, a factor of safety, which not only guards the shovel in its travel throughout, but which acts as a safety valve in case of danger.

The curve, although established theoretically, has been verified by the actual workings of the shovel, and the expected results have all been brought out in practice.

Boom Stresses.

It has seemed to the author that in a structure of this nature, where practically every condition exists that is prejudicial to its life, the assumed working strains should be of a most thoroughly conservative nature. The steam shovel is apt to be in operation in very cold weather, and this condition, when members have been heavily stressed, has accounted for the failure of many outdoor structures. Furthermore, there is scarcely a member in the boom which does not receive a repeatedly varying and sometimes rapidly reversed stress.

The short length of the truss emphasizes the need of taking into account this varying and reversal of stress, since the dead load strains of the structure itself are very small compared with the live load strains of the traveling shovel. A possible break in the boom is apt to be fatal to the structure as a whole, hence very small fiber strains have been assumed.

When it is considered what careless handling a steam shovel of this kind may receive at the hands of a workman, scarcely any assumed stress can be called too conservative, and where conditions of this kind are to be guarded against the structure can scarcely be made too secure.

Again, the shovel may possibly be caught in the hatch of a boat and not be perceived by the engineer, in which case the engine would exert its maximum pull, a quantity much greater than that necessary to raise the shovel. To allow for this, all stresses have been computed for the maximum engine pull, irrespective of the loading in the shovel. This, of course, is greatly in excess of the actual working loads. The conditions under which the engine may be exerting its maximum pull are, however, quite possible, and, with a careless engineer and a small hatch, quite probable.

Here follows a discussion of these stresses and a table of actual tests of the material.

The C. W. Hunt Company were the designers and builders of all the coal handling machinery. The structural steel work of the hoists and coal shed was done by the Passaic Rolling Mill and the Union Bridge Company.

Electric Transformers.

Under the title "Transformer Design and Operation," the General Electric Company have issued in pamphlet form two important papers on the subject of electrical transformers. One is written from the standpoint of the central station manager by W. P. White, general manager of the Omaha, Neb., Electric Light, Heat & Power Company; the other, by Prof. Winder Elwell Goldsborough, M.E., deals intimately with the question of transformer economy. The first paper, which was read before the American Institute of Electrical Engineers, is the record of long personal experience with the operation of transformers under actual commercial conditions, showing the relation of the many losses incident to the use of many small transformers, to the earning capacity of the plant, and the very tangible economies realized as the result of the substitution of a few high efficiency transformers of large capacity. Mr. White gives examples of these economies reduced to dollars and cents. In his station a saving of \$6000 per annum in the cost of coal alone was realized as the result of the practical application of lessons drawn from his extended observation and experience.

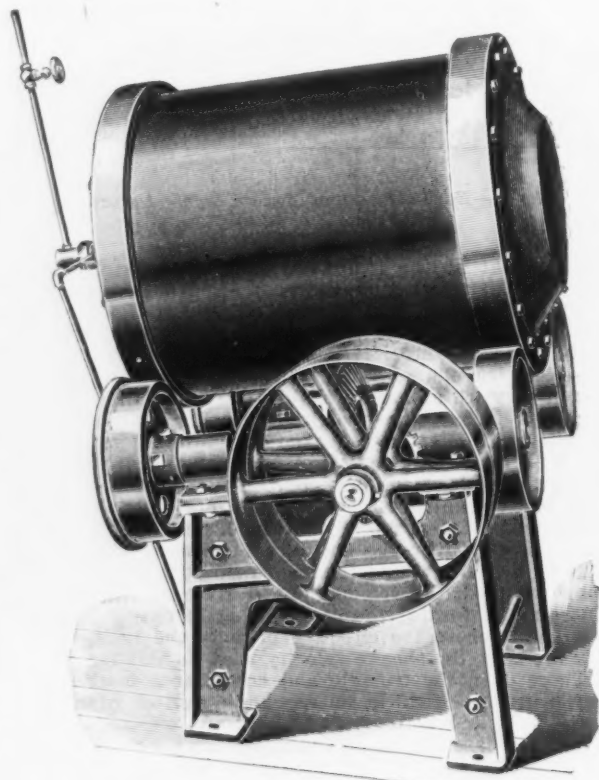
Professor Goldsborough's paper was read before the National Electric Light Association, and treats of the inherent economy of transformers of various design and construction. It contains many able arguments in favor of the use of high grade transformers and emphasizes the necessity of frequent tests as the only means of detecting leaks, losses and the general depreciation of transformers. Professor Goldsborough gives examples of manufacturers' claims belied by careful test, but instances other cases in

which guarantees have been exceeded, and urges upon station managers the wisdom of keeping as vigilant a watch on the efficiency of their transforming apparatus as upon the items of operating expense and maintenance if economical results are to be obtained.

To these papers the General Electric Company have added several maps, showing graphically the significance of the substitution of a few large transformers for numerous small ones.

The Henderson Steam Heated Tumbling Barrel.

The steam heated tumbling barrel made by Henderson Bros. of Waterbury, Conn., consists of an inner steel shell, 22 inches diameter by 30 inches long, and an outer shell of the same material. Steam circulates in the space between the shells and both enters and leaves at the rear. The door for removing the work is also in the rear. The front end is open and the barrel instead of being horizontal is tipped up a little, running on friction wheels, as shown in the engraving. Power is applied by means of tight and loose pulleys and transmitted by bevel gears to the friction pinions. All rivets in the inner shell are countersunk so that the rolling surface is smooth. The



THE HENDERSON STEAM HEATED TUMBLING BARREL

machine is made in a substantial manner, with a view to convenience in operating, and weighs, complete, 1152 pounds.

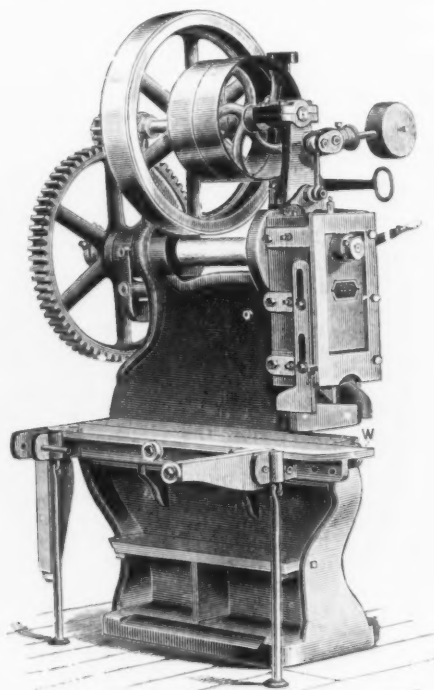
The Chicago courts have dismissed the injunction restraining the Drainage Canal Board from carrying out its contract with the Scherzer Rolling Lift Bridge Company for the construction of the eight-track railroad bridge at Campbell avenue, Chicago, and that company are now in a position to rush the work to completion. The contract price is \$369,140, and under the agreement the structure must be finished on or before September 1, 1899. After the injunction was granted the board advertised for new bids. They were rejected, unopened, on Wednesday of last week upon the advice of the attorney.

The regular monthly meeting of the Pittsburgh Foundrymen's Association was held on Tuesday evening, December 27. The following resolution was adopted: "Resolved, That the Pittsburgh Foundrymen's Association recommends to the American Foundrymen's Association the adoption of standard methods of grading pig iron for foundry purposes, and that our representative be requested to bring this matter before the executive board for action." The paper of the evening was entitled "Yard Grading of Pig Iron," and was contributed by Dr. Wm. B. Phillips of Pittsburgh.

A Drawback Decision.

The Treasury Department has rendered the following decision: On the exportation of pig iron manufactured by the Maryland Steel Company, at Sparrow's Point, Md., from a mixture of imported and domestic iron ores, and on the exportation of steel billets, steel rails, or steel fish plates from such materials, to which have been added imported or domestic spiegeleisen or ferromanganese, a drawback will be allowed equal in amount to the duties paid on the imported materials so used, less 1 per cent of such duties.

Prior to manufacture for export with benefit of drawback the manufacturer shall furnish to the Collector of Customs at the port of Baltimore a sworn statement showing the date of beginning the proposed manufacture, the kind and quantity of articles to be manufactured, and the proportions of the several materials, imported and domestic, intended to be used, together with the percentage of metallic iron contained in each of the ores, and of manganese in the spiegeleisen or ferromanganese. The date of importation and name of vessel by which the imported materials were received must be shown, and a copy of the specifications under which the articles are to be manufactured will be attached to and form a part of said state-



THE BERTSCH UNIVERSAL PLATE SHEAR.

ment; the statement and specification to be finally filed with and form a part of the drawback paper.

On receipt of the aforesaid statement the Collector will detail a customs officer to supervise and inspect the process of manufacture for export with benefit of drawback, and the manufacturers shall be required to reimburse the Government for the compensation paid to such officer during the time he is so employed, and such officer shall at all times be given free access to the works of said company and to the records pertaining to the manufacture of the articles to be exported. At such time and in such form as the collector may require report shall be made by the officer so detailed, which report shall be filed with and form a part of the drawback papers.

The entry under which the merchandise is to be inspected and laden must show the number and weight of the several kinds of articles to be exported and, separately, the weight of the waste or scrap incident to the manufacture thereof; and the drawback entry, in addition to the foregoing and the usual averments, must show that the exported articles were manufactured of the materials and in the manner set forth in the sworn statement and specifications filed with the Collector, as hereinbefore provided.

In the identification of materials the said entry must show the quantity of each kind of ore or metal, or both, imported and domestic, and the respective percentages of metallic iron or manganese contained therein, used in the manufacture of the articles covered thereby, and, separately, the quantity of each kind of imported materials contained in the waste or scrap incident to the manufacture of such articles, and also the percentage of value per ton such waste or scrap bears to the articles manufactured therewith.

In the liquidation of entries the quantities of the several imported materials which may be taken as bases of allowance of drawback may be the quantities declared in the drawback entry, after official verification, deduction being made from the total quantity of each, for such percentage thereof as is contained in the waste or scrap, as the value of such waste or scrap bears to the articles to be exported. Thus, if the value of rails is \$20 per ton and the waste or scrap therefrom is \$10 per ton, a deduction shall be made from the quantity of imported materials used in the manufacture of such waste or scrap of 50 per cent. thereof; or rails at \$20 per ton and waste or scrap at \$15 per ton, a deduction of 25 per cent. should be made.

Weights of the articles to be exported must be verified by a United States weigher, except as to rails, which are of uniform weight per lineal yard, of which no official weighing shall be required; but the statement in the entry as to the total weight thereof shall be verified by an official count and measurement, and a computation based upon the number of yards ascertained and the known uniform weight per yard.

Samples of the materials used may be taken, as ordered by the Collector, for such official or other expert examination as may be required.

Lake Iron Ore Matters.

DULUTH, January 1, 1899.—The latest purchase of mines has been the Norman lease by the Oliver Company. Norman mine corners on the Lone Jack of that company, and the purchase is another indication of the closeness of figuring in mining matters, and the necessity for saving every cent that is to be saved. The Oliver Company really do not need any more ore of the Norman grade, a soft dusty non-Bessemer, but they do want to save in mining costs, so they have bought this mine with the idea of using the property to give an outlet by loop tracks for the ore mined at the Oliver-Lone Jack group. If a few cents can be saved in the cost of handling these ores by this plan, well and good, and the Norman purchase will have done its work, aside of course, from the operation of mining the ore in the property itself. The Norman is a good illustration of the difference in ideas on the Mesaba range subject since the early days. The Minnesota Iron Company bought the lease of the property in 1892 for a royalty that would now be considered out of all reason and for the payment of \$100,000 as a bonus to the fee holders. To-day the Oliver Company are said to get the mine for just about that portion of the Minnesota Company's development work that should be charged against the ore left in the mine, and without any contract compelling the ore to be carried on the Minnesota Company's railroad. This latter is perhaps the most surprising feature of the whole deal, for the Norman has been carried along as a Minnesota Company property for the past few years merely on account of its railway tonnage, the company having quite largely given over any immediate hope of profit by mining operations there.

Officials of the Pittsburgh & Lake Angeline Mine, Ishpeming, are examining the Franklin group at Virginia, on the Mesaba, with the view to purchase, the property having been offered to Jones & Laughlins. It is hardly probable they will take the mines, I think. The examination is being made with exceeding care.

Old mines, idle many years, are being examined with as close attention on the iron ore ranges as in the copper country, and the list of long abandoned properties to be started up before spring is growing larger week by week. Most of these are low grade properties, conditions as to which have changed by the shifting demands of the furnacemen and the introduction of new methods and sources of supply. The latest on the list is the Iron River Mine at Stambaugh, Mich., and neighboring prospect. For years the mines of Iron River have been idle. They are low grade non-Bessemer.

The Bertsch Universal Plate Shear.

The Bertsch universal plate shear is made with 10 or 16 inch blades for trimming and slitting $\frac{1}{4}$ to $\frac{3}{4}$ inch plates. It is also arranged for cutting angle iron and for punching, if desired, the throat being 8 to 15 inches. The knife head has a long bearing in substantial guides, and full provision is made for taking up wear. The extension side table, with its bracket arms, is provided with friction rolls for ease and convenience in shifting the plates. The table and arms can be quickly turned down and the latter can be made any required length. The casting in the rear of the blades is extra wide to insure strength, and there is ample clearance for shifting the cut metal. The main frame is also provided with a heavy strengthening bolt in the rear of the throat. The gearing and driving pulleys are entirely out of the way. This machine is built by Bertsch & Co. of Cambridge City, Ind.

The Cuban Tariff.

The Administrative Provisions.

WASHINGTON, January 3, 1899. —The President having approved the tariff to be imposed upon merchandise imported into Cuba, the metal schedules of which were recently published in *The Iron Age*, the Treasury Department has prepared a series of important administrative provisions of special interest to American manufacturers and exporters who may desire to establish or increase their trade with the island. Special attention is called to the distribution of sub-ports of entry, and to the fact that questions arising thereat will be referred to the Collector at Havana, from whose decision there will be no appeal, except in cases where he voluntarily refers the matter at issue to the Secretary of War. Following is an abstract of the principal provisions of the new administrative code:

"The port of Havana has been duly designated as the chief customs port of Cuba, and the following have been declared to be sub-ports—viz., Matanzas, Cardenas, Cienfuegos, Sagua, Caibarien, Santiago, Manzanillo, Nuevitas, Guantanamo, Gibara, Baracoa, Trinidad, Santa Cruz, Zaza and Batabano, in the island of Cuba, and the officer of the army duly assigned to each of said ports as Collector will have general jurisdiction of the collection of customs at such ports respectively. Any questions arising at any sub-port will be referred to the collector at Havana for his decision, from which there shall be no appeal, except in such cases as he may refer for decision to the Secretary of War.

"All imported merchandise must be entered at the custom house of the port of arrival, either for immediate consumption or in bond, by the person holding a bill of lading, which names him as the consignee, or a bill of lading indorsed to his order by the consignee named therein. A banker holding a bill of lading as security for advances of money may transfer the same, by indorsement, to the actual importer. Underwriters will be recognized as consignees of merchandise abandoned to them and salvors as consignees of merchandise found by them derelict at sea.

"A consignee holding a bill of lading drawn to his order or assigns may transfer the same to any person who can lawfully make the required declarations on entry, and the holder of a bill of lading drawn, in blank, 'to order,' and indorsed by the shipper or consignee, may make entry of the merchandise specified therein.

"Whenever, from evidence furnished by the invoice or bill of lading, or, as in the case of custom house brokers and forwarders, by the known business of the parties making entry, the collector has reason to believe that the consignees named in the bill of lading are, in fact, intermediary agents for the delivery of the merchandise to the ultimate consignees or real owners, there shall be required upon the entry a statement of the names of such ultimate consignees, and bonds must be taken for the production of the declaration of the owner or real importer. And collectors will, whenever they consider it expedient, require such ultimate consignees or owners to produce any invoices or bills of sale pertaining to the importation which they may have in their possession.

"Merchandise of which entry is not perfected at the expiration of the period allowed by these regulations for the discharge of cargo of the importing vessel will be taken possession of by the collector as unclaimed and placed in store, to be disposed of as hereinafter provided.

"Unless otherwise specially provided by regulation, duties accrue upon imported merchandise on arrival of the importing vessel within a customs port with intent to unlade.

"Entries for bonding may be made either for placing the merchandise in warehouse or for its constructive warehousing and immediate transportation to other ports without appraisement; and merchandise in warehouse may be withdrawn either for consumption, for exportation, for transportation to another port and rewarehousing. Two of these objects may in some cases be combined in one withdrawal. Whenever goods are so transported in bond without appraisement, they must be consigned to the care of the collector or acting collector at the port of destination, who will allow entry to be made at his port by the actual consignee.

"Entries shall be in duplicate in writing, according to prescribed form, and shall be signed by the importer or his duly authorized agent, and shall declare the names of the importing vessel and her master, her port of departure and date of arrival, the number and marks of packages or the quantity, if in bulk, and the nature of the merchandise contained therein; also the value thereof as set forth in an invoice to be presented with the entry, with all costs incident to placing the same, packed, ready for shipment to the United States.

"Every invoice must represent a distinct shipment to one consignee or firm of consignees by one vessel. If by reason of accident or short shipment a portion thereof

should fail to arrive, an extract from the original invoice, certified by the collector and naval officer, may be used for entering the remaining packages, but the consolidation of separate shipments on one invoice shall not be permitted. Invoices must be made out on firm and durable paper and legibly written in ink, and must contain the quantities of the merchandise in the weights and measures of the country of exportation. Press copies shall not be accepted for customs purposes.

"The description on the entry of the merchandise shall be in terms of the tariff and in the currency of the invoice, and the values of the several classes of merchandise shall be separately placed under their respective rates of duty, as claimed by the importer, and the totals of each class duly shown. The rates of duty thus stated on the entry shall be advisory only, and shall not govern the collector's classification for the assessment of duty.

"For the assessment of duty, the currency of the invoice must be reduced to the money of account of the United States upon the basis of the values of foreign coins, as proclaimed by the Secretary of the Treasury on the first days of January, April, July and October of each year. The date of the consular certificate will indicate the value of invoice currency.

"When the standard value of a foreign coin has not been thus proclaimed, any invoice expressed in such coin must be accompanied by a consular certificate showing such value in standard gold dollars of the United States.

"Every invoice, as soon as entered, shall be stamped with the date of the entry and certified by the signature of the acting collector or his deputy; and the officers whose duty it is will compare the classification made by the importer with the description given in the invoice, and will see that the merchandise is entered at the rates provided by the tariff. Entries and all papers pertaining thereto, respectively, will be designated by a serial number. The rates of duty charged upon entry and the entered value shall be stamped with the date of entry and name of the vessel of importation.

"The consignee named in the bill of lading, or the person to whom such consignee shall, by indorsement, have assigned the bill of lading, shall present to the officer duly designated for that purpose by the military authority his bill of lading, an invoice describing the goods, showing their character, quantity and cost, together with an entry in duplicate, showing the name of the importer and of the vessel of importation, the place whence the goods are imported, the date of their arrival at the port of destination, the marks and numbers of the packages, the nature and quantity of their contents, their value, including costs incurred in packing them for shipment at the currency in which the invoices were made out. The invoice must be made out in the currency of the country of exportation, and must be verified by the oath of the shipper. The entry shall be signed by the importer, who must make affidavit to the truth of all the statements contained therein, and shall agree in value and description with the facts shown by the invoice.

"After the packages and contents have been duly compared with the invoice and found to agree therewith, the duty due thereon will be computed on the face of the entry; and only after the payment of the proper duties and charges, an order for the delivery of the packages and contents will be issued by the proper officer.

"Any objections to the assessment of duty must be filed by the importer before the payment by him of the same; and no refund of duty will be made thereafter, except when specially ordered by the general in command.

"The acting collector of the port shall cause to be examined not less than 10 per cent. of the packages comprised in any one invoice, and shall satisfy himself of the nature and quantity of their contents. The examining officer shall indorse upon the invoice, in red ink, his report as to the dutiable character and value of the merchandise; and this report shall be the basis for the exacting of duty by the collector.

"Goods found to be fraudulently entered, either as to value, quantity, or character, shall be forfeited to the Government, and any goods which have been the subject of an attempt to import into Cuba without going through the custom house shall be seized and confiscated.

"Entries of merchandise covered by any one invoice may be made simultaneously for both consumption and warehouse. Where an intent to export the merchandise is shown by the bill of lading and invoice, the whole or a part of an invoice not less than one package may be entered for 'warehouse and immediate export.' In this case the collector may designate the vessel in which the merchandise is laden as constructively a 'warehouse,' in order to facilitate the direct transfer of the goods to the exporting vessel. The same procedure may apply to goods entered for 'warehouse and immediate transportation.'

"Any goods, wares, or merchandise, not duly entered within 90 days after importation, shall be sold at auction by order of the officer in command of the United States forces after five days' public notice conspicuously posted at the port: Provided, That the period of 90 days may be extended by said officer not exceeding a period of six

months from the date of importation, when good and sufficient reasons therefor are presented to him, if his judgment and the interest of the Government will permit of such extension. The proceeds of such sale will be kept for ten days, subject to the demand of the importer, after deduction of the proper duties on the goods and all expenses of storage and sale.

"All seized and confiscated merchandise shall be sold in like manner, and the proceeds, after deduction of expenses, shall be turned over to the officer duly designated for that purpose.

"Such public buildings as may be suitable for the purpose shall be used and occupied for the transaction of business and for the storage of imports in the ports aforesaid.

"All supplies and materials for the use of the Army and Navy of the United States shall, under suitable restrictions to be prescribed by the commanding general, be admitted without payment of duty." W. L. C.

The Changes in the Illinois Steel Company.

An interesting interview is published in the *Chicago Tribune* for December 31 with President E. H. Gary of the Federal Steel Company, now controlling the Illinois Steel Company.

"For what reasons did Mr. Gates leave the Illinois Steel Company?" was asked.

"Principally because he was about tired out," said Mr. Gary. "He also has large interests in the American Steel & Wire Company and is going back to them. The wire people were sorry to have him leave when he went over to the Illinois Steel Company, and they are glad to get him back. Mr. Buffington was the only candidate to succeed him who has ever been considered by our people. As for W. P. Palmer, W. A. Green and A. M. Crane, they leave us in a perfectly friendly spirit, and I have letters from each of them showing the kindest feelings. I don't know whether Mr. Palmer's place will be filled again. I am not sure the office is needed. As for the others, we have plenty of applications and we can fill those positions at our leisure."

There have been persistent rumors since Mr. Gates' resignation was announced of antagonism between the Illinois Steel Company and the American Steel & Wire Company. These Mr. Gary wished to dispel.

"Instead of an antagonistic feeling," he said, "there is the greatest good feeling between the two companies. At Joliet we have a rolling mill which makes steel rods, and the wire company have a mill which uses steel rods to make wire. They buy their rods of us. They also purchase a quantity of steel billets, which we manufacture and they do not. We are not competitors at all."

Outlining the prospects of the Federal Steel Company for 1899, Mr. Gary said:

"We have the business of producing steel under our control from the mining of the ore to the delivery of the finished product. First, the Minnesota Iron Company own many of the best mines in the Mesaba range. There are ten or fifteen in all, and they will give an unlimited supply of the best Bessemer ore.

"The Duluth & Iron Range Railroad, which we have, connects all of the mines to Lake Superior at Two Harbors and Duluth. The Minnesota Steamship Company have a fleet of eight steamers and eight towing schooners, many of them being of the largest class, and two more are now building at South Chicago. These boats will carry the ore to South Chicago, and also to Lorain, Ohio, where we have a fine plant. Two new blast furnaces there are nearly completed, and the expenditure on this plant alone has been two and a half to three million dollars.

"Then there are the Chicago, Lake Shore & Eastern Railroad, which connects with all main lines, and the Elgin, Joliet & Eastern Railroad, the Belt line, running from the lake around the city to the lake. We have coke works at Mt. Pleasant, Pa., and large coal tracts there. We bring our coke over any line and deliver it to the Chicago, Lake Shore & Eastern to unload at our plants, and with the Elgin, Joliet & Eastern we deliver the finished product to all main lines for distribution to any part of the country.

"We have no monopoly, but we control the business from the ore to the finished product. We seek to reduce prices rather than increase them, and if we make any money it will be by reason of our advantages and economy."

The business of the Illinois Steel Company for the coming year is well in hand. As many orders for steel rails have been booked as the works can well turn out, and it is the same in the other lines. The dock capacity at the South Chicago mills will be increased to four and a half million tons of iron ore a year. While no plans are being considered for establishing an armor plant at South Chicago, the company will erect large

cement works on their property known as the Cheltenham tract.

Mr. Gary stated there was no truth in the report the rolling mills at Joliet and Milwaukee would be closed down and the whole business operated from South Chicago.

Prominent among the persons gossiped of as successor to President Gates was W. L. Brown. It is stated on excellent authority that Mr. Brown has at no time seriously considered an application for the position. His many business connections, including the Chicago Shipbuilding Company, of which he is president, are all the cares he is willing to assume.

Trade Publications.

Ornamental and Structural Iron Work.—Chester B. Albree of Allegheny, Pa., has issued a catalogue of designs of bridge railings, portal crestings, newels, lamp posts, cornice and fascias, stairways, &c., which have been designed and executed by him for bridges. The designs here presented are the result of 12 years' experience in the manufacture of bridge railings, during which time tens of thousands of feet of railing have been made for all parts of America. Most of the designs shown can be made continuous—that is, the design is continuous throughout the line, the panels being equal in length and equal at each end, and fitted to join with any other panel. Special continuous posts either of the rigid or adjustable type here used may be fastened at any point along the railing. Railings are made heavy or light, high or low, with close or open filling as necessity or taste may require. Special designs for work of this character, together with estimates of cost, will be furnished by the builder. Engravings of a few of the most distinctive designs erected are presented.

Electric Locomotives.—Circular 15 of the Jeffrey Mfg. Company of Columbus, Ohio, describes their electric locomotives for mines, steel and smelting works and for local transportation of all kinds. The operation of an electric locomotive system about mines has demonstrated that its use is the most economical and practical for the class of work, and the rapidity with which it is being adopted in mines of all kinds, as well as for outside purposes, is a strong recommendation of its adaptability. The circular describes and illustrates by means of half-tone engravings many of their different types and sizes of electric locomotives.

Seamless Steel Tubing.—Catalogue E, 1899, of the Shelby Steel Tube Company of Cleveland, Ohio, describes the many bicycle specialties which the company are manufacturing, including front forks, continuous or one piece forks, D rear forks and stays, oval rear forks and stays, taper gauge handle bar and frame tubes, fork stems, continuous fork crowns, D and octagon shaped tubing. The long experience and superior facilities possessed by this company for the manufacture of tubing and bicycle specialties are a guarantee to the trade that the quality and finish of the product are of the highest type. The best grade of Swedish open hearth steel is used in all their material. Their various specialties are made in many different thicknesses and sizes of tube, and in a great variety of shapes.

Pressure Blowers.—The Connersville Blower Company of Connersville, Ind., in their last catalogue describe their cycloidal piston pressure blowers, gas exhausters for artificial gas plants, rotary cycloidal pumps for mining, drainage, water works purposes and their cycloidal water motors for developing natural water powers. On account of the increased blast pressure required for smelting and foundry furnaces these blowers are made much heavier than is usual with machines of this type. The patented ring oiling adjustable quarter box journal bearing, which was introduced by the company in 1896, is a most marked feature. The journals are of large diameter and generous length, and therefore the intensity per square inch on the bearing is far below that usually allowed for engine and machine bearings. The bottom and side walls of the journal boxes are cast solid with and form part of the ribs or braces of the head plates. Directly under the center of each box is a wide web leading down to the broad foot, thus carrying the load directly to the foundation. The journal box frames are planed out accurately to receive the caps and inner portions of the bearings. Each bearing is made up of four removable sections or quarters which are lined with the best grade of babbitt. Ample provision is made for adjustment and lubrication. Many different patterns and sizes of these blowers are shown in the catalogue.

OBITUARY.

STEPHEN A. MORSE.

Stephen A. Morse, widely known as the inventor of the twist drill, died in Philadelphia on the 22d ult., in his seventy-second year. Mr. Morse was born in Holderness (now Ashland), N. H., and received his education in the common schools and at Franklin Academy, New Hampton, N. H. At an early age he was apprenticed to a jeweler and watchmaker in Dover, with whom he remained a short time and then, at the solicitation of his brother, went to Lowell, Mass., and learned the machinist trade in the shops of the Lowell Mfg. Company, having as shop mates at the time A. G. Budlong, Frank S. Pratt (of Pratt & Whitney Company), and other men since well known in the mechanical world. Up to the time of the beginning of the Civil War Mr. Morse was engaged in building various kinds of machinery, being at different times with John Souther and Hinkley & Drury of Boston, Elias Howe and others. For a short time during that period he was in business for himself in Boston, with the late Peleg Coffin, the firm name being Coffin & Morse. In the early part of the year 1861, while working on Government contracts for the Springfield Armory, Mr. Morse produced and patented his twist drill, which tool is now found in every machine shop the world over, and which has completely revolutionized modern shop practice. The Morse Twist Drill & Machine Company (founded by Mr. Morse) still continue to manufacture these standard tools at New Bedford, and have been one of the most successful manufacturing corporations in the United States. Later in life Mr. Morse became interested in elevators, founding the firm of Morse, Williams & Co., from which he retired in 1891.

JAMES D. CLARE.

In the death of James David Clare of Portsmouth, Ohio, which occurred at midnight, Wednesday, December 21, the iron industry of the Hanging Rock region of Southern Ohio has lost one of its pioneers. Mr. Clare died, after a short illness, at the home of his daughter in Columbus, Ohio, in the seventy-ninth year of his age. He was born in Washington, D. C., November 13, 1822, receiving his education at Alexandria, Va., and in Jackson County, all of which was of the most meager description. His father had gone to Ohio in 1833, locating near Springfield, but three years later he removed to Lawrence County, where he was employed at various furnaces. In 1838 he again removed to Jackson County, residing on a farm until his death in 1851. Being in poor circumstances young Clare had to help at the farm and at the furnace in order to aid in the support of the family. He took advantage of such opportunities as he had and at last was able to secure a certificate to teach school during the winter months. In 1847 he taught at Ohio Furnace and in 1849 he began farming in Jackson County. This he continued until 1852, when he opened a general store in Berlin. To this was added in 1854 a saw and grist mill. In June, 1865, he with others established a banking house under the name of Kinney, Bundy & Co., afterward known as Chapman, Clare & Co., and now as the First National Bank of Jackson. In 1868 with some others he purchased Madison Furnace, and in 1872 assisted in the establishment of the Ohio Stove Company, of which he had long been president. In 1874 he and his associates built the Huron Furnace, and in 1879 purchased the Bloom Furnace. He went to Portsmouth, Ohio, in November, 1873. It was here he was taken ill, but before his death he went to Columbus for medical relief. He was married in 1846, his wife dying about three years ago. He left six children.

GEORGE P. HODGMAN.

News was received last week by the Baldwin Locomotive Works, Philadelphia, of the death in Colombia, South America, on November 28, of George P. Hodg-

man, one of their most trusted engineers. Mr. Hodgman arrived at Buenaventura, Colombia, on November 22, to take charge of some new locomotives built by the company. There he was stricken by fever and died at Ventanas, while being removed to Bogota for treatment. He was a native of Wilmington, Del.

JOHN H. EGAN.

John H. Egan, superintendent of the pattern department of the Edward P. Allis Company, Milwaukee, Wis., died of pneumonia, December 23, at his home in that city, aged forty-seven years.

SAMUEL S. BENT.

Samuel S. Bent died suddenly at Rye, N. Y., on December 31, from paralysis of the heart. He was born seventy years ago in New York and many years ago established the Globe Iron Foundry in that city. The foundry was afterward removed to Port Chester, N. Y.

ROBERT SMACK.

Robert Smack, who died at his home in Brooklyn, N. Y., December 28, aged seventy-four years, had been in the foundry business in New York city under the name of Robert Smack & Co., for 48 years. At his foundry he carried out some important work for war vessels, for the Roach shipyards and for the Quintard and the Morgan Iron Works.

FRED. KELLEY.

Fred. Kelley, for nearly 30 years the treasurer of the Lewiston Machine Company, Lewiston, Maine, died December 26, at his home in that city, from apoplexy, following an attack of the grip. Mr. Kelley, who was fifty years of age, was born at Parker's Head, Maine, but went to Lewiston when a boy, where he resided up to the time of his death.

JOHN N. MAUGHER.

John N. Maugher, a widely known furnace builder, died on December 28, at his home in Pottstown, Pa., aged sixty-nine years.

JOSHUA I. HARRISON.

Joshua Inloes Harrison, proprietor of a large machine shop at Connersville, Ind., died at that place, aged fifty-three years, after a long illness from consumption. He was born at Fayetteville, Ind., and when a youth removed to Connersville, where for several years he was employed in the Roots foundry. In 1875 he established the

machine business of which he was the proprietor at the time of his death.

BANNEN COLEMAN.

Bannen Coleman, president of the Central Coal & Iron Company, and one of the most prominent business men of Louisville, Ky., died in that city on December 22, from pneumonia, after a brief illness, aged forty-three years.

EZRA G. CONE.

Ezra G. Cone, a well-known bell founder of East Hampton, Conn., died of paralysis at his home in that place, December 22, aged sixty-seven years. Mr. Cone was prominently identified with all matters connected with the welfare of his town, and had served it in several public capacities.

CALVIN W. PARSONS.

Calvin W. Parsons, a well-known mechanical engineer, died at Scranton, Pa., from paralysis, on December 27. He was born in Wilkes-Barre, Pa., in 1852 and was educated at the Wyoming seminary. For a time he was employed as a mechanical engineer in New York and Providence, R. I.; also with Thomas B. Edison and at the Vulcan Iron Works, Wilkes-Barre. In 1882 he went to Scranton and was in the employ of the Dickson Manufacturing Company, and afterward, for 11 years, was connected with the Lackawanna Iron & Steel Company. In 1894 he opened an office in Scranton and started in business for himself.



STEPHEN A. MORSE.

JOHN W. CHALFANT.

On the 28th ult., John W. Chalfant, one of the most prominent iron manufacturers of Pittsburgh, died in Allegheny, the city in which he was born on December 13, 1827. He was graduated from Washington and Jefferson College, and, in 1856, entered the employ of Spang & Co., iron and steel manufacturers, as a clerk. The firm were then composed of Charles S. Spang and James McCauley. In 1858 these gentlemen retired and Mr. Chalfant and A. M. Byers became partners in the concern. A few years later Mr. Byers also retired, leaving Mr. Chalfant as sole owner. The firm since 1858 have been known as Spang, Chalfant & Co. Mr. Chalfant was a pioneer in the using of natural gas for fuel, having first used the gas from a well near the Etna mill at the Spang-Chalfant plant, as early as 1875, where it gradually displaced coal as fuel. Afterward the firm drilled wells in Butler County and piped the gas down Pine Creek. Mr. Chalfant was largely interested in financial institutions, being one of the founders of the People's National Bank, a director of the institution since its formation, and of late years its president. He was also one of the founders of the West Penn Hospital, and of the Allegheny General Hospital, and a director in the Merchants & Manufacturers' Insurance Company, and in the Pittsburgh Locomotive Works. He was president of the Isabella Furnace Company, and was one of the founders of the Duquesne Club.

WALTER W. WOODRUFF.

Walter W. Woodruff of Mt. Carmel, Conn., died on the 30th ult., after a brief illness. Mr. Woodruff was born in Southington on December 27, 1835. Deceased was self educated in that he had only limited school opportunities in his youth. At the age of 15 he became a clerk in a grocery store in Hartford. Later he had an advantageous offer to enter the employ of a jewelry house in New York city. Here he was quite successful, but finding it for his business advantage to return to Southington, he entered the employ of Peck, Smith & Co., hardware manufacturers, as shipping clerk. His fidelity, industry and ability won him rapid promotion and in due time he became head salesman for the firm. In 1863 he began the manufacture of carriage bolts at Mt. Carmel, the firm name being Woodruff & Wilcox. Later he returned to the employ of Peck, Stow & Wilcox (formerly Peck, Smith & Co.) as salesman, that firm having made him a very flattering offer to serve in that capacity. His success was in keeping with former efforts, but in 1868 he decided to go back to Mt. Carmel and resume the manufacture of carriage bolts, which he continued for a time, and then again, yielding to the urging of Peck, Stow & Wilcox, returned to their employ as salesman. In 1870, together with Mr. Wilcox, he purchased a one-half interest in the carriage hardware firm of Ives & Grannis, the business being continued under the firm title of Ives, Woodruff & Co. Later he purchased the interest of Mr. Wilcox, and in 1883, together with Willis E. Miller and Henry Ives, he purchased the Ives interest in the business, and the firm then became Woodruff, Miller & Co., Mr. Woodruff's son, Arthur E., being admitted to partnership. In 1888 Mr. Woodruff purchased the Miller and Ives interest in the firm and admitted his son, Harry P., the firm name being Walter W. Woodruff & Sons, which has since continued.

J. B. MERRILL.

J. B. Merrill, a member of the firm of Merrill & Cole of the Beloit Iron Works, died on December 26, at Rockford, Ill., after a long illness from heart trouble. Mr. Merrill and his brothers were foremost in building up the manufacturing industries of Beloit.

MOSES WELLS.

Moses Wells, aged 95 years, died at his residence in Chicago on the 1st inst., of the grip. Mr. Wells was sick

only three days. Mr. Wells was an old resident of Chicago, but never had engaged in active business there. He was born in Salisbury, Conn., in 1804. At the age of 21 he moved to Berkshire, Mass., and engaged in the iron trade. In 1857 he went to Chicago and retired from business. Mr. Wells had four sons and three daughters, one son, Robert M. Wells, being vice-president and treasurer of the Wells & Nellegar Company, wholesale hardware merchants in California.

THE WEEK.

Workmen of the Altoona (Pa.) machine shop of the Pennsylvania Railroad claim to have broken all records for fast engine building. Work was commenced on a locomotive Tuesday afternoon, December 27, and at 1.30 p.m. on Thursday, December 29, the engine was complete and ready to be taken to the round house. The time spent on it was 21 hours and 30 minutes. The locomotive was a large one of the Mogul type.

The Nicaragua Canal Commission, in their preliminary report just made public, declare that the construction of a canal across Nicaragua is entirely feasible, and that of the two best known routes the one called the Lull route is the more desirable. They also state that a canal suitable for modern necessities would cost about \$123,000,000. Colonel Hains, one of the commissioners, while concurring in general with the views of the other members, thinks, however, that their estimate of cost is too low by about 20 per cent.

The remarkable possibilities of our climate for rapid changes are illustrated in a report from St. Paul, Minn., which shows that on December 29 and 30 the thermometer dropped from 55 degrees above zero to 16 degrees below zero within 24 hours.

A \$40,000,000 combination in the paper trade is in course of organization. The deal will include the mills making writing paper, bond paper, wrapping, ledger, envelope and news paper. The arrangements for the proposed consolidation are being made in Providence, R. I.

Preparations are being made in Cincinnati, Ohio, for the annual convention of the National Association of Manufacturers of the United States, to be held in that city on January 24, 25 and 26. A number of matters of prime importance will come up for consideration and it is expected that

this meeting will be the most interesting yet held by the association.

It has been decided by the Treasury Department that the new tariff for Porto Rico will not be put into force until February 1. It was hoped that it might be possible to have it ready by January 1, when the new Cuban tariff went into effect, but it was found that a great deal of careful work is required to perfect all the paragraphs, therefore it will not be promulgated until it has received thorough consideration. It is understood that the changes will not be as numerous as was first anticipated.

The Shelby Steel Tube Company.—The stockholders of the Shelby Steel Tube Company, Shelby, Ohio, will on January 30 vote on a proposition to issue preferred stock not to exceed \$1,000,000.

The Shenango Valley Steel Company.—The rod, wire and wire nail mills of the Shenango Valley Steel Company, New Castle, Pa., have been sold outright to the American Steel & Wire Company.

A Fire Brick Consolidation.—Judge S. S. Savage, president of the Ashland Fire Brick Company of Ashland, Ky., is forming a company to include all of the manufacturers of fire brick in the United States.

The Iron Age.

New York, Thursday, January 5, 1899.

DAVID WILLIAMS COMPANY,	-	-	-	-	-	PUBLISHERS.
CHARLES KIRCHHOFF,	-	-	-	-	-	EDITOR.
GEO. W. COPE,	-	-	-	-	-	ASSOCIATE EDITOR, CHICAGO.
RICHARD R. WILLIAMS,	-	-	-	-	-	HARDWARE EDITOR.
JOHN S. KING,	-	-	-	-	-	BUSINESS MANAGER.

Our Position as an Export Country.

Apart from the events connected with our war with Spain, the year just ended will long be noted chiefly, not only so far as we ourselves are concerned but in other countries as well, for the large volume attained in the exports of American manufactures and their wide distribution over the world. Year by year we have freed ourselves from dependence on foreign factories, until 1898 has shown a larger total of exports of manufactured articles from this country than imports of such goods into it. An average export of more than \$1,000,000 a day of manufactures alone for a whole year is a good showing, and yet no doubt many of our people will consider this only as a beginning. In all the lines in which our products have gone abroad in good volume the world's consumption is likely to grow constantly larger rather than smaller, and the same is true of the capacity of American foundries and factories to produce them.

But it is not to be taken for granted, merely because the United States have shown, during the past year, the highest record ever made in this country in the export trade that we are going on to first place among exporting nations without making any special effort. It does not follow that the rate of growth in our exports is going to continue indefinitely, for at that rate there soon would be nothing left in the way of export trade for the rest of the world. What has been demonstrated is our ability to produce many lines of goods of a quality such as to disarm all prejudice and criticism in foreign markets, and also that in many cases the advantage in cost is in our favor as against all competitors. These illustrations of what American manufacturers can do have had a surprisingly wide range, our shipments having found their way into positively every country in the world, involving comparison with the products of every country where manufacturing can be said to exist.

Yet we have some things to learn and some conditions may have to be modified before we can be certain of the first place among nations exporting manufactures on an important scale. To begin, our very successes will prove a spur to increased activity in industrial circles abroad, lest the new competition which has arisen in America should drive their trade to the wall. The energy which has been shown in Europe hitherto, in the search for new methods in manufacturing, and the continued progress which has been made, have been too marked for any idea to be entertained that those countries will simply let everything go at first sight of what has been called "the American invasion" of foreign markets. On the contrary, we may expect to hear of more technical schools, of more commercial museums, of more export trade commissions, of the introduction of new machinery and new processes—on the theory that the competition of a hitherto unsuspected industrial power will render necessary an even stronger fight for trade supremacy than was in progress already among the manufacturing countries beyond the Atlantic.

While our people have a right to feel proud of their year's record, it is not certain that the transactions of the year have been clearly analyzed in all their relations. One thing certain is that the proceeds of our exports in excess of our imports have not all been added to the wealth of the country. No one knows to what extent foreign capital is invested in productive enterprises in this country, or what share of our exports is required to pay the dividends and interest due periodically to the owners of that capital. Another uncertain quantity is the amount expended abroad by Americans of leisure and wealth, whose bills are paid, sooner or later, by cargoes of merchandise of American production. Aside from these matters our exports are carried, for the most part, on foreign owned ships, whose earnings go to increase the wealth of other lands. Likewise almost every transaction in international trade to which one of our citizens is a party contributes, directly or indirectly, to the profits of foreign banks; whenever advices regarding shipments are cabled, the chances are that a foreign cable profits from it; and foreign commission houses and middlemen handle most of our exports—some lines going through many hands before reaching the consumer, all of which claim a profit.

The point to be made is that, no matter how cheaply we may produce goods in America, so long as foreign ships collect freights on our exports and our imports as well, and so long as it is impossible to collect payment for our exports or to remit for goods purchased abroad except through the medium of foreign banks, the national showing of profits may not be commensurate with the amount of our foreign trade. Much has been said, and well said, about the desirability of closer attention on the part of Americans to the conditions under which goods are sold abroad, with a view to more direct relations between producer and consumer. It is on this subject that the United States Consul at Birmingham wrote recently: "While I believe we are the best manufacturers in the world, I am also convinced that we are the poorest traders, and this is impressed on me over and over again every day in my correspondence with American merchants and manufacturers, and in my observations of the way they are handling the new export trade and their endeavors to get into it." No doubt these assertions are too sweeping, since there have been some instances of striking success in foreign markets made by thoroughly American exporters, but none the less the Consul's words merit attention as expressing the unprejudiced opinion of an intelligent observer on the methods of his fellow countrymen when they undertake to do business away from home.

By the time our exporters have learned more generally to adapt their energies to the special conditions to be met abroad, perhaps we shall have more ships flying "the Stars and Stripes," and even banks abroad operated with American capital, with a total result of a better showing on our side from whatever export trade we may be doing. As for the expenditures of our tourists abroad and the payment of returns on foreign capital invested here, it is perhaps better that the accounts should be settled with exports of our commodities than in the shape of money drawn from our savings in the past. Our export trade has reached really important proportions in some lines, not accidentally, but because of the intelligent activity of capable men, to whom the suggestions above may appear neither original nor new. There are others, however, who need yet to learn that all export trade is not necessarily profitable, and that an excess of

exports over imports does not always imply an increase of the country's wealth.

As for the growing activity of foreign competition—which American exporters must be prepared to face in larger measure every year—it may be worth mentioning that whereas our exports last year to the neighboring republic of Mexico fell off 5 per cent. the exports from England to the same country increased 17½ per cent., those from Germany 12 per cent., those from France 9 per cent. and those from Belgium 23 per cent. If we cannot hold the trade of a next door neighbor better than this, it can hardly be expected that we shall maintain any sort of position in far off countries in competition with other important industrial powers without special effort on lines with which not all our people are as yet familiar.

The Effect of Cheap Money.

The abundance of capital is the most striking and potent factor in the business situation in this country to-day. We are being carried along inexorably toward a lower interest level, with all that that fact implies. Such a movement is not of course uniform. It proceeds irregularly with occasional spurts, and is subject even to reactions, but the tendency toward a lessened return on money is irresistible. We seem to have entered one of those periods of readjustment, because there has been a very large accumulation of capital as the result of two years of good crops, of heavy exports and of general economy. The low rates of interest prevailing in our financial centers are due to heavy additions to the supply of funds, and not to the narrow demand which comes from a paralyzation of commerce and industry. As a nation we are beginning to learn how to save money, while some of our agricultural sections and some of our manufacturing industries have made money on a liberal scale in recent years.

Until now this money has sought reinvestment very cautiously, creating that demand for high class bonds, stocks and other securities which are regarded as sure to pay a moderate interest. But the signs are multiplying that moneyed men, large and small, are growing impatient of the moderate but safe returns, and that they are willing to take greater chances in order to secure larger profits. In other words, a spirit of speculation is developing, of which there have been some notable manifestations. Witness the booming of copper stocks in Boston, the speculation in tin plate stocks in Chicago and the enormous transactions in iron stocks in New York and Philadelphia. As yet merchandise has felt little of this impulse, but the first symptoms are appearing, and it may not be long before the brakes will have to be put on by every one who has some influence to check it.

In railroad circles one of the arguments in favor of the stocks is that refunding operations of expiring bonds must permit of the diversion of a large proportion of earnings to the holders of shares.

A very powerful aid in the floating of our industries and in the advancing of values on the older ones is the promise of a better return for money than can be gotten in former channels of investment.

In fact, it looks as though our moneyed men may soon follow the example of the British capitalists, many of whom invest the bulk of their fortunes in what they consider absolutely safe investments at a very low rate of interest, and then use the balance for more or less speculative ventures in the hope of lifting their returns above the usual average.

Although low rates of interest, due to a superabundance of money, are therefore likely to foster speculation to some extent, that effect is overshadowed by the beneficent influence which is exerted on the enormous number of new enterprises of merit. The fructifying influence of capital wisely spent in the creation of new enterprises is beyond calculation. That we are likely to experience during the next few years.

The Outlook for Lake Ores.

Final figures for the year show the movement of ore to furnaces for 1898 to have been not far from 2,500,000 tons greater than in the year immediately preceding. Of this about 1,500,000 tons comes from the increased shipments of the year, which have been 13,650,788 gross tons by water and probably 350,000 tons by rail, and the remainder from the increased movement from receiving docks to furnaces. A year ago there were 800,000 tons more ore on Lake Erie docks than now, while Lake Michigan stocks were considerably heavier than this winter. The total consumption of lake ore for the year, other than what has been taken from stocks in furnace yards and which may be supposed to have nearly balanced itself, has been not far from 15,000,000 gross tons. We have contended in the past few months that a stringency in suitable ore supplies for next year's melt was not impossible. The figures will bear a little analysis and may show the situation. Of the 5,000,000 tons of ore now on Lake Erie docks there is said to be very little unsold; in fact, market reports from Cleveland are now constantly referring to the "few tons" of various varieties of ore to be had. The opening of navigation will probably see no ore to speak of on that market. It is pretty evident now that the consumption of 1899 is to be larger than that of the past year. Old range lake mines are now running on such a basis, gauged for the mining of perhaps 10,000,000 tons of ore previous to the close of next year's lake season. The now ascertained limitations of Mesabas would add about 5,000,000 tons to this as the output for the year. Of course these figures can be stretched by the wonderful elasticity and vast resources of the mines, and they may be increased considerably.

But there is another factor of some importance, and that is the question of transportation. New tonnage is in sight for spring operations amounting to about two-thirds the shrinkage of the year just closed. Owing to various causes this new tonnage cannot be materially augmented till late in the summer. The total carrying capacity of the lake ore fleet was last year shown to be considerably more than the 13,650,000 tons carried down; during a portion of the early summer many ships were idle because of low freights. But to offset this there was carried out of Lake Superior during the months prior to September only 11,500,000 bushels of wheat, which is much under the average, while other articles demanded far less room than customary. In the case of wheat there was double the quantity sent over the lakes from Duluth alone in the early months of 1897 than in the same months of 1898, and in that period of 1896 the quantity was nearly three times that of 1898. In neither of these years was there anything like the stock of grain in the Northwest that there is now, and conservative predictions are that not less than 40,000,000 bushels of vessel room will be demanded by the wheat trade from Duluth alone in the early months of this year. Other articles of heavy freight are in much the same condi-

tion, and the surplus tonnage is likely to all be in use early and late next season. It is difficult to see now where there will be opportunity for the carriage by water of much more ore than was handled the past season. If these ideas prove to be correct there is no real need for the ore sellers to approach the spring sales period with any great fear of the outcome, or in the same attitude as in the recent past. In this connection, of course, the ownership of mines by steel makers is a factor that will act like a balance wheel on every branch of the ore trade.

PERSONAL.

Porter W. Shimer has established himself as chemist and metallurgist at Easton, Pa. He will make a specialty of analyses of iron, steel, metals, ore, fuel, slag, cement, &c., and physical tests of iron, steel and cement. Mr. Shimer proposes also to give attention to chemical investigation of troubles arising in the manufacture and use of metals.

Charles I. Earll, mechanical engineer, patent expert and solicitor, has removed his offices from 120 Broadway to 27-29 Pine street, New York.

Clement F. Street, who has been editor and manager of the *Railway Review*, Chicago, for seven years, and prior to that was chief draftsman for the Chicago, Milwaukee & St. Paul Railroad at Milwaukee for four years, has accepted a position with the Dayton Malleable Iron Company, Dayton, Ohio, to look after their railroad business. The malleable company have just completed additions to their plant which will increase their output one-third. Extensive improvements have been made in their equipment.

The friends of John Stevenson, Jr., general superintendent of Shenango Valley Steel Company at New Castle, Pa., and also identified with other manufacturing interests at that place, will be pained to learn of a severe accident which occurred to Mr. Stevenson. On Friday, December 30, he, in connection with another man, was in the steel mill when the fly wheel burst, throwing fragments all over the mill. Mr. Stevenson jumped to get out of the way and fell between the tables, having one leg broken and being severely bruised about the face and head. It is stated, however, that he sustained no internal injury and his complete recovery is expected.

The selection of Eugene J. Buffington as president of the Illinois Steel Company does not surprise those who know him well. He is a man of great ability and President E. H. Gary of the Federal Steel Company says that he was chosen solely on account of his fitness for the position. Mr. Buffington is only in his thirty-seventh year. He was a stockholder in the American Nail Company when they removed their plant from Covington, Ky., to Anderson, Ind., and was made treasurer. This position he held until his company consolidated with others to form the American Steel & Wire Company, of which corporation he became secretary and afterward treasurer, holding the latter position until last week. As one of the directors and members of the Executive Committee he demonstrated business talents of a high order, which led to his advancement to the important position in the industrial world that he now holds. Mr. Buffington is a believer in elevating the moral standard of humanity, and while residing at Anderson he was president of the local Young Men's Christian Association.

Prior to his retirement from the general sales agency of the Illinois Steel Company, on Saturday, A. M. Crane was presented by his associates in the sales department with a set of diamond sleeve buttons. The gift was made not merely in appreciation of his ability in managing the department but also as an expression of their personal esteem and in recognition of his uniform kindness. The presentation speech was made by Major Charles D. Rhodes of the sales department.

Walter L. Zelnicker, formerly general manager of the Southern Log Cart & Supply Company of Mobile, Ala., having disposed of his interest in that company has established himself in the machinery, railway and factory supply business at 202 North Third street, St. Louis.

Passed Assistant Engineer Walter M. McFarland, United States Navy, one of the assistants of Engineer-in-Chief Melville at Washington, has tendered his resignation from the naval service to become assistant general manager of the Westinghouse Company at Pittsburgh, Pa.

G. F. Danielson, formerly general superintendent of the Toledo Machine & Tool Company, Toledo, Ohio, has

purchased the equipment of the Toledo Drop Forge Company's plant at Glassboro, Ohio, and will shortly start up works of his own.

G. H. Carver, for many years superintendent of the Plano Mfg. Company, Plano, Ill., has been elected vice-president and superintendent of the Detroit Malleable Company, Detroit, Mich., who occupy the plant formerly belonging to the Michigan Malleable Iron Company.

Henry T. Gause has been elected president of the Harlan & Hollingsworth Company, Wilmington, Del., to succeed his father, the late John T. Gause. Horace W. Gause becomes vice-president and J. Rodney Gause a director of the company.

A complimentary dinner was given to John W. Gates, the retiring president of the Illinois Steel Company, at the Calumet Club, Chicago, on the evening of December 31, by the officers and department heads of the company. The dinner is said to have been the most elaborate affair of the kind ever given in Chicago. A feature of the occasion was the presentation of a handsome loving cup, appropriately inscribed. The presentation speech was made by William P. Palmer, second vice-president. Mr. Gates had been president of the Illinois Steel Company for four years, covering a most eventful period, his first year witnessing the short lived boom of 1895 and the subsequent years covering the worst experience in the history of the steel trade, through which he safely brought the company, now making large earnings.

Henry Souther, who for the past five years has been in charge of the department of tests of the Pope Mfg. Company, has resigned his position and has established an office and laboratory as a consulting engineer and steel expert at 438 Asylum street, Hartford, Conn. Mr. Souther, after having graduated at the Massachusetts Institute of Technology in 1887, and spending the following year in Germany, completing his studies, entered the open hearth and Bessemer steel department of the Pennsylvania Steel Company. In 1893 Mr. Souther established the department of tests of the Pope Mfg. Company. Although no longer in the service of the latter company, Mr. Souther will, as occasion may demand, act as their consulting expert in engineering problems and in materials.

A. W. Green, late secretary of the Illinois Steel Company, has been appointed treasurer of the American Steel & Wire Company, succeeding E. S. Buffington. The other officers, as we are advised by telegraph, are still to be appointed.

Robert G. Wells, of Mariopol, Russia, was in Pittsburgh this week, where, it is reported, he will place contracts for about \$1,000,000 worth of machinery for the new Mariopol Steel Works, designed by Julian Kennedy. The works will include beam mills, a ship plate mill and a slabbing mill.

H. L. Harper of Cincinnati, who was so active a factor in the boom of 1879-1880, and who at one time was involved in a wheat corner, is now associated with the Etna Coal & Iron Company, with headquarters at New York. The company are preparing to blow in the furnace at Ironton, Ohio.

The Riter Conley Mfg. Company.—The firm of Riter & Conley of Pittsburgh, Pa., manufacturers of plate and structural material, have sent out a notice of a change in the style and personnel of the concern from January 1. The partnership, which existed since April, 1873, is dissolved, and the new concern, known as the Riter-Conley Mfg. Company, have been incorporated under the laws of New Jersey, with a capital stock of \$750,000, and the following officers: President, Thomas B. Riter; vice-president, William C. Coffin; secretary-treasurer, John S. Craig; general manager, Robert A. McKean. The concern were founded in 1860 by James M. Riter, a brother of Thomas B. Riter, and existed as such until January, 1873, when James M. Riter died. Then Thomas B. Riter and William H. Conley formed a partnership and continued the business. This endured until July, 1897, when Mr. Conley died. His interest was bought by the surviving partners, who are members of the present corporation. The concern have an annual output of 30,000 tons of plate and structural material. They employ 1200 men, constituting the construction shops and erection forces. Two plants are maintained. The heavy plate boiler and tank plate departments are on Water street, First, Second and Third avenues, Pittsburgh. The structural department and gas holder works occupy a tract of 7 acres in Woods Run, Allegheny.

Information Wanted.—Who produces machinery for making horseshoes and horseshoe nails?

THE PHILADELPHIA IRON MARKET IN 1898.

BY THOMAS HOBSON, PHILADELPHIA.

Last year we said that "1897 had been one of the most eventful years ever known in the iron and steel trades," but compared with 1898 it now seems commonplace. This has not been the case as regards prices, which have been singularly uniform, and are to-day almost identical with those quoted a year ago, except billets, which are about 75 cents per ton dearer, bars and angles \$1 dearer, and plates about \$4 dearer. During the early summer prices got to the low point, which was 75 cents below to-day's prices for pig iron, \$1.50 for billets, \$1.50 for bars, and about \$4 lower on plates, all of which has been recovered, and in some cases a little more than that, and with this difference, that the present tendency is unmistakably upward, while a year ago we stated that the feeling among buyers was "indifferent and offish," although production at this time averages at the rate of about 500,000 tons per year more than it did during December, 1897. It may also be noted that stocks are about 200,000 tons less than they were a year ago, while the weekly output in 1897 dropped to the low point of 159,720 tons, and for nine consecutive months kept considerably below 200,000 tons per week, while the lowest in 1898 was 206,000 tons, and eight monthly reports showed an output in excess of 225,000 tons weekly. These are significant features, and need to be carefully considered in order to arrive at a true estimate of the situation.

The uppermost thought in the trade is, can this pace be maintained? This, of course, is something of a problem, which it is impossible to answer with absolute certainty, although by using such data as can be made available it would seem as though a reasonably safe estimate can be formed.

In the first place, it is universally conceded that iron and steel can be produced cheaper in the United States than in any other country. It is also tolerably clear that the world's requirements are steadily increasing, and it is also equally clear that our own requirements, as the chief manufacturing country of the world, will be very much larger than they have ever been before. Something like 500,000 tons per year of sheet bars are now required for the tin plate trade. This is practically not only an entirely new source of consumption, but displaces 250,000 to 300,000 tons of imports. What the total exports will amount to during 1898 is not made up yet, but in four separate orders, all taken within the past 30 days, no less than 154,000 tons of material have been taken on foreign account, as follows: 80,000 tons of rails for the Russian Government, 35,000 tons of rails for Australasia, and two orders for the same colony for plates, one for 35,000 tons the other for 4000 tons, of which it may be remarked 75 per cent. of the entire business will be finished by Eastern mills. Besides these lots, a heavy tonnage has been taken in pig iron, bars, pipe, skelp and other material, so that the last two months of the year will not fall far if anything short of 200,000 tons sold for export.

As to the permanency of this trade, there is really no reason to question it for a long time to come. The sources of supply of ores and fuel in the Old World are becoming more uncertain and more costly every year, and so far as careful and extensive research has developed, there is absolutely no chance for discoveries which will admit of successful competition with the United States. A further consideration is in regard to their requirements during the next two or three years. This also appears to be pretty definitely settled, the chances being that we shall underrate rather than overrate the situation. The problem is too complex, however, to be easily understood. China, with its 400,000,000 of people, is emerging from

semi-barbarism, even if not of their own volition. Great Britain or Russia, or a combination of the Great Powers, will give them railroads and other appliances of civilization, not disinterestedly, perhaps, but they will be a different people five years hence, and, in the meantime, will have millions upon millions' worth of goods sent to them, no inconsiderable portion of which will be to the advantage of Uncle Sam. Egypt, and, in fact, the whole of Africa, will also be factors of tremendous importance during the next few years, while the experience of the past 12 months shows what Australasia will be to us.

Turning to the European markets, we find that ship-building and engineering (the leading interests) are being carried on to an unparalleled extent, with no prospect of abatement, to say nothing of war ships, which (in view of the peace proposals?) are being planned and pushed to completion with feverish anxiety. The mercantile marine is also being expanded at an astonishing rate, yet the scarcity of tonnage shows that the world's business has totally outstripped what until recently were ample shipping facilities. More could be said in support of these views, but turning to our own country we find very similar conditions. The supply of cars and locomotives has been inadequate, and, although about 2000 locomotives have been built by private shops during 1898, 100,000 freight cars, 700 passenger cars and 4700 street cars, there are still many complaints of scarcity, so that 1899 is also expected to be a big year in these branches, especially for foreign account. The shipyards are also figuring on the largest business they have ever had, so that whichever way we turn there is nothing but activity in prospect.

Pig Iron.

The year 1898 has undoubtedly been the banner year as regards the volume of business. There has not been much variation in prices, and it is somewhat remarkable to find that they are precisely the same to-day as they were a year ago. During the spring and summer months they dropped off about 75 cents per ton, and until about September gave little promise of improvement, but since that time they have been uniformly firm, with a gradual tendency to a higher level. When it is remembered that the production during 1898 will in all probability exceed that of 1897 by 1,500,000 tons, the fact that prices have recovered the midsummer decline, and are now equal to what they were a year ago, while stocks are 200,000 tons less, is a matter of profound significance. With a current output which is now equal to about 12,250,000 tons per year, and which will probably be increased to 12,500,000 tons in course of the next three months, people say it's astonishing how prices hold up. Upon careful consideration, however, it will be seen that there is nothing abnormal in it. The iron is wanted, it is passing into consumption as rapidly as it's made, and there is every reason to believe that the market in 1899 will be broader and bigger than it was in 1898; therefore, why shouldn't prices advance? The wonder is that they haven't advanced more. There is room for that yet, however, but it will depend in a measure on developments within the next six or eight weeks. There may be a very sharp rise; there cannot be any decline worth serious consideration, unless something totally unforeseen happens.

As to the character of the demand during 1898, it may be remarked that iron for puddling purposes has cut a very small figure compared to what it formerly did. No. 2 X Foundry and No. 2 Plain are regarded as the standards, although during the past couple of months some large lots of mill irons were taken in the Harrisburg district. Basic open hearth has also become an important factor with some of the Eastern furnaces, and, although at one time during the fall months it sold below \$10, delivered, it recovered with other grades 75 cents to \$1 per ton, and is now firm at about the same figures as quoted a year ago. The prospect for Eastern furnaces (relatively considered) is better than it was a year ago.

Some disappointment has been felt at the tardiness in the development of the Edison plant, but this is not due to any failure in the process, but it was found impossible

to get sufficient labor during the winter months, owing to the long distances which many of the men had to travel to their homes. A sufficient number of houses are being built adjacent to the works, however, which will obviate this difficulty when they are completed, which is expected to be some time during the spring or early summer months. Another feature was alluded to in last week's issue of *The Iron Age*, under the caption of "Tidewater Iron Plants," so that, taking everything into consideration, prospects for the Eastern iron trade are decidedly hopeful.

The range of prices for tidewater deliveries during each month of the year was as follows:

January.—No. 2 X Foundry, \$11.25 to \$11.50; No. 2 Plain, \$10.75 to \$11; Standard Mill Iron, \$10.50; Ordinary Mill Iron, \$10 to \$10.25.
February.—No. 2 X Foundry, \$10.75 to \$11.25; No. 2 Plain, \$10.50 to \$10.60; Standard Mill Iron, \$10.25; Ordinary Mill Iron, \$9.75 to \$10.
March.—No. 2 X Foundry, \$10.75 to \$11; No. 2 Plain, \$10.50 to \$10.60; Standard Mill Iron, \$10.25; Ordinary Mill Iron, \$9.75 to \$10.
April.—No. 2 X Foundry, \$10.75 to \$11; No. 2 Plain, \$10.25 to \$10.40; Standard Mill Iron, \$10.5; Ordinary Mill Iron, \$9.75 to \$10.
May.—No. 2 X Foundry, \$10.75 to \$11; No. 2 Plain, \$10.25 to \$10.40; Standard Mill Iron, \$10.25; Ordinary Mill Iron, \$9.75 to \$10.
June.—No. 2 X Foundry, \$10.65 to \$11; No. 2 Plain, \$10.25 to \$10.40; Standard Mill Iron, \$10.5; Ordinary Mill Iron, \$9.75 to \$10.
July.—No. 2 X Foundry, \$10.50 to \$10.75; No. 2 Plain, \$10 to \$10.25; Standard Mill Iron, \$10.25; Ordinary Mill Iron, \$9.75 to \$10.
August.—No. 2 X Foundry, \$10.50 to \$10.75; No. 2 Plain, \$10 to \$10.25; Standard Mill Iron, \$10.25; Ordinary Mill Iron, \$9.75 to \$10.
September.—No. 2 X Foundry, \$10.75 to \$11; No. 2 Plain, \$10.50 to \$10.60; Standard Mill Iron, \$10.25 to \$10.50; Ordinary Mill Iron, \$10.
October.—No. 2 X Foundry, \$10.75 to \$11.25; No. 2 Plain, \$10.50 to \$10.60; Standard Mill Iron, \$10 to \$10.25; Ordinary Mill Iron, \$9.75.
November.—No. 2 X Foundry, \$10.75 to \$11.25; No. 2 Plain, \$10.50 to \$10.60; Standard Mill Iron, \$10 to \$10.25; Ordinary Mill Iron, \$9.75.
December.—No. 2 X Foundry, \$11.15 to \$11.25; No. 2 Plain, \$10.75 to \$11; Standard Mill Iron, \$10.65; Ordinary Mill Iron, \$10.40.

Steel Billets.

There has been no year since billets have been an article of commerce in which prices varied so little as during 1898. Two dollars and twenty-five cents per ton represents the extreme range. August and September were the lowest months, during which period \$16.25 to \$16.75 were ruling prices, the highest for 1898 having been reached during the last two weeks of the year—viz.: \$18.25 to \$18.50, at which figures the market closed strong. Month by month quotations ruled as follows:

January.....\$17.40 to \$17.50	July.....\$17.00 to \$17.25
February.....17.30 to 17.40	August.....16.75 to 17.00
March.....17.30 to 17.40	September.....16.25 to 16.75
April.....17.30 to 17.40	October.....17.75 to 17.90
May.....17.25 to 17.90	November.....17.75 to 18.00
June.....17.00 to 17.25	December.....17.75 to 18.50

Finished Material.

The year 1898 was undoubtedly the banner year as regards output, with the possible exception of iron bars. Prices were very low, however, not much better in fact than in 1897, which was the lowest on record, but full time has been made at most of the leading mills, consequently the result of the year's business should be favorable in a comparative sense. It would be difficult to attribute the improvement to any demand of a special character, but it was due rather to a quickening along the entire line, and to some extent by a distinct perception that in future more or less of a foreign demand could be counted on. Sales of plates alone will probably aggregate over 100,000 tons on foreign account, and as at least half that tonnage will have to go forward early in 1899, it puts the plate mills in excellent condition as regards new business. The shipyards have also been steady buyers, and are likely to require still larger quantities during the next 12 months, but the most satisfactory trade has probably come from the boiler shops and engineering works, from which source the inflow of orders has been both large and continuous, and as a rule for quick deliveries. Car builders and bridge builders, but especially the former, have taken unprecedented quantities, and from the amount of work in that line, which has only recently been placed, it is quite certain that there will be no falling off in the demand from this source for a long time to come. The general demand has also been very large, poles for electric light and trolley purposes, plates for systems of irrigation, stand pipes, gas holders, and, in fact, the demand has not only come from the usual class of consumers, but for a great many purposes that are of very recent development, steel cars, for instance. The demand for structural material has also been the heaviest on record, the total for the year being estimated at 400,000 tons, which is one-third greater than during 1897, and which in 1899 is likely to reach a total of 500,000 tons.

Exports have been quite considerable, but the scarcity of tonnage and the difficulty of handling some of the larger sizes make them very objectionable to many of the steamship lines as articles of freight. Bars have been exported to a considerable extent, but the general demand has shown no such growth as in other branches of the iron and steel trades. Sheets have been in heavy request during the entire year, but prices have been stubbornly low, and even yet they have not responded in proportion with other specialties, although there is no doubt that they will take their turn in due course. Prices at the close of each month were as follows for seaboard deliveries, taking re-

finer iron as the basis for bars and tank as the basis for plates:

	Plates. Cents.	Bars. Cents.
January.....	1.15 to 1.20	1.15 to 1.20
February.....	1.15 to 1.20	1.12½ to 1.15
March.....	1.15 to 1.20	1.12½ to 1.15
April.....	1.15 to 1.20	1.12½ to 1.15
May.....	1.20 to 1.25	1.10 to 1.15
June.....	1.20 to 1.25	1.10 to 1.15
July.....	1.20 to 1.25	1.10 to 1.15
August.....	1.20 to 1.25	1.10 to 1.15
September.....	1.30 to 1.35	1.10 to 1.15
October.....	1.30 to 1.35	1.10 to 1.15
November.....	1.30 to 1.35	1.10 to 1.15
December.....	1.35 to 1.40	1.15 to 1.20

Old Material.

There has been a pretty steady market for old material, and prices have shown only slight changes, except when there was a temporary scarcity of some particular article, in which case comparatively high prices were reached. Taking the entire year, however, the uniformity was somewhat remarkable, prices at the close of 1897 and 1898 being almost identical, except steel rails, which are about 75 cents per ton better, and iron rails 50 cents better than they were a year ago. Prices during the year ranged as follows:

Scrap.

JANUARY.	JULY.
Railroad.....\$12.50 to \$13.00	Railroad.....\$12.50 to \$13.00
Machinery.....9.25 to 9.50	Machinery.....9.00 to 9.50
Steel rails.....10.25 to 10.75	Steel rails.....9.75 to 10.25
Iron rails.....12.50 to 13.00	Iron rails.....12.00 to 12.50
Car wheels.....9.25 to 9.75	Car wheels.....10.00 to 10.25
FEBRUARY.	AUGUST.
Railroad.....\$12.25 to \$12.75	Railroad.....\$12.00 to
Machinery.....9.25 to 9.50	Machinery.....9.00 to
Steel rails.....10.50 to 10.75	Steel rails.....to
Iron rails.....12.50 to 13.00	Iron rails.....12.00 to
Car wheels.....9.75 to 10.00	Car wheels.....9.75 to
MARCH.	SEPTEMBER.
Railroad.....\$12.25 to \$13.00	Railroad.....\$12.00 to \$12.50
Machinery.....9.25 to 9.75	Machinery.....9.00 to 9.50
Steel rails.....10.50 to 10.75	Steel rails.....10.50 to 10.50
Iron rails.....12.50 to 13.00	Iron rails.....12.25 to 12.50
Car wheels.....10.50 to 11.00	Car wheels.....10.00 to 10.50
APRIL.	OCTOBER.
Railroad.....\$12.25 to \$13.00	Railroad.....\$12.00 to \$12.50
Machinery.....9.25 to 9.75	Machinery.....9.25 to 9.50
Steel rails.....10.40 to 10.50	Steel rails.....10.50 to 10.75
Iron rails.....12.50 to 13.00	Iron rails.....12.50 to 12.75
Car wheels.....10.25 to 10.75	Car wheels.....10.25 to 10.75
MAY.	NOVEMBER.
Railroad.....\$12.00 to \$12.25	Railroad.....\$12.00 to \$12.50
Machinery.....9.25 to 9.50	Machinery.....9.25 to 9.50
Steel rails.....10.25 to 10.75	Steel rails.....10.25 to 10.75
Iron rails.....12.00 to 12.50	Steel rails.....12.50 to 12.75
Car wheels.....10.25 to 10.75	Car wheels.....10.25 to 10.75
JUNE.	DECEMBER.
Railroad.....\$12.00 to \$12.25	Railroad.....\$12.50 to \$12.75
Machinery.....9.25 to 9.50	Machinery.....9.25 to 9.50
Steel rails.....10.50 to 10.75	Steel rails.....11.25 to 11.50
Iron rails.....12.00 to 12.50	Iron rails.....13.00 to 13.50
Car wheels.....10.25 to 10.75	Car wheels.....10.25 to 10.50

The firm of Simpers Bros., Iron and Steel factors, Stephen Gerard Building, Philadelphia, have been dissolved and the business will be continued by Thos. W. Simpers, at 421 Chestnut street, under the name or style of Thos. W. Simpers & Co. Mr. Simpers will also represent, as sales agent, the Aetna-Standard Iron & Steel Company.

F. von A. Cabeen has withdrawn from the firm of J. Tatnall Lea & Co., Philadelphia, and has opened an office in the Real Estate Trust Building, Broad and Chestnut streets, Philadelphia, where he will conduct a general commission business in Steel and Iron, under the name or style of Cabeen & Co.

The *Railroad Gazette*, in its yearly statistics of the output of locomotives and cars in the United States, estimates that during the past year all the contracting locomotive shops, outside of the railway shops, constructed 1875 locomotives, as against 1251 in 1897, an increase of almost 50 per cent. The total output of cars is calculated as 105,518, of which 99,809 were freight, 699 passenger and 4650 street cars. Of these 1663 were exported. The past year shows the largest output of cars, the next being 1890, when 103,000 cars were built by contracting firms.

Oakman Motor Vehicle Company, Greenfield, Mass., who manufacture the Hertel motor carriages and delivery wagons, have recently added to the equipment of their factory a large lot of special machines for making the various parts of their carriages quickly and economically, and advise us that they are now producing them rapidly.

The Charles Hillman Ship & Engine Building Company of Philadelphia made last week an assignment for the benefit of their creditors to J. Warren Coulson. Charles Hillman, the founder and president of the concern, died a week previous to the assignment.

MANUFACTURING.

Iron and Steel.

The plant of the United States Iron & Tin Plate Mfg. Company, Demmler, Pa., has heretofore been operated part on sheet iron and the balance on tin plate. Some of the mills are equipped as sheet mills while others could be used for either sheet iron or tin plate. As before noted in these columns, the whole plant has been rebuilt and now contains 11 complete hot mills for rolling tin plate. This plant has recently been turned over to the American Tin Plate Company.

The Glasgow Iron Company, lessees of the lower works of the Pottstown Iron Company, Pottstown, Pa., have made a proposition to the employees of the 112-inch mill to put it in operation provided they accepted a reduction of 25 per cent. It is likely the proposition will be favorably considered by the employees and the mill started up at an early date.

The Webster, Camp & Lane Machine Company of Akron, Ohio, have received a contract from the Ohio Steel Company of Youngstown for the ore handling plant for the two blast furnaces now under construction by that concern. The contract embraces one Hulett patent car dumper of a capacity to handle the largest steel hopper ore cars. It receives the cars as they come from the lake ports, dumping each car into a series of four buckets set side by side on a special car standing on a lower track. The stock pile ground is commanded by two bridge tramways of 250-foot span, with a cantilever at the back end overhanging the tracks leading to the furnace. The plant is to be in operation by June or July, 1899.

The Ashland Iron & Steel Company, operating the Hinkle charcoal blast furnace at Ashland, Wis., will this year build by-product charcoal kilns near the furnace plant and chemically utilize the waste gases, thus reducing the cost of their fuel.

The Carnegie Steel Company, Limited, Pittsburgh, Pa., will erect a 100-inch plate mill on the land recently purchased from the Hays estate, at Homestead, for the building of a steel car works. The smaller sizes of plates used in the building of steel cars will be rolled in the other smaller mills of the Homestead Steel Works. As before noted in these columns, the new car works will have a capacity of about 40 cars per day, which will mean a consumption of close to 500 tons of plates daily.

We are advised by the La Belle Iron Works, Wheeling, W. Va., that the statement that they would put in additional tin mills, or, in fact, make any other additions to their present plant, is untrue.

The Riverside Iron Works, Wheeling, W. Va., state that the report that they would erect a sheet mill is without foundation.

The Altoona Iron Company, Altoona, Pa., give employment to about 140 men and have recently received orders sufficient to keep their guide mills in full operation for the next three weeks.

In regard to the report that the Federal Steel Company would probably absorb three or four of the large blast furnaces in the Mahoning Valley, we are advised that there is no foundation for this statement.

The Dillon-Griswold Wire Company of Sterling, Ill., have certified to an increase of capital from \$300,000 to \$375,000.

Machinery.

The Case Mfg. Company, Columbus, Ohio, are furnishing a 60-ton electric traveling crane to the Burgess Steel & Iron Works, Portsmouth, Ohio. They have also lately shipped a large rope crane to the Aetna-Standard Iron & Steel Company, Bridgeport, Ohio.

Metcalf, Paul & Co. of Pittsburgh, operating the Verona Tool Works, at Verona, Pa., advise us that the statement that they would remove their plant to Braeburn, Pa., is untrue. They state that the Verona Tool Works will remain in the same place in which they were built 25 years ago, and that they have not had at any time any intention of removing the plant from its present location.

The Wilson-Snyder Mfg. Company, Pittsburgh, Pa., manufacturers of pumps, are considering the advisability of removing their plant to some location on the Monongahela River, probably near Homestead. The present plant of the concern is considerably cramped for room and if they decide to remove they will likely build much larger works.

We are advised that W. C. Young Mfg. Company, Worcester, Mass., are so rushed with orders at the present time that they are running until 9 o'clock every night.

The Youngstown Bridge Company, Youngstown, Ohio, manufacturers of iron and steel bridges, roofs, turntables and structural work, are putting up a large hoop mill building for the Union Iron & Steel Company, of Youngstown, consisting of one part 160 feet wide and 70 feet long, and one part 80 feet wide and 210 feet long. They are also getting out a building for W. B. Pollock & Co., also of Youngstown, 45 x 170 feet, and are furnishing considerable structural steel work for the Aschman Steel Casting Company for the improvement of their plant at Sharon, Pa.

We are advised that the Turner water tube boiler, manu-

factured by the Turner Engineering Company, Bucyrus, Ohio, is meeting a prompt acceptance on the part of some very critical and extensive steam users. These boilers are made in sizes from 100 to 500 horse-power, and the company are now installing them in various parts of the country in a range of sizes from the smallest to the largest. Among the present contracts in hand are two 100 horse-power for the Standard Snuff Company, Nashville, Tenn.; two 500 horse-power for the Midland Steel Company, Muncie, Ind., and three 225 horse-power, together with piping, boiler feeders and large stack, for the Indianapolis Ice & Cold Storage Company, Indianapolis.

The American Steel Foundry Company of St. Louis are making an extensive addition to their present well equipped works at Granite City, Ill. The new casting building will have a central span of 80 feet and wings of 60 feet, the total length being 400 feet, the contract for it having been secured by the Koken Iron Works of St. Louis.

The Saco & Pettie Machine Shops, manufacturing cotton machinery, at Newton Upper Falls, Mass., have a large amount of work on hand. About 900 men are employed at both plants and the company have orders for some months ahead.

The Springfield Mfg. Company of Bridgeport, Conn., manufacturers of special grinding machinery and emery wheels, report a rapid increase of business, their electric car wheel grinder being one of their principal machines. This company have recently made several foreign shipments, including Sweden, Germany, England and South American points.

A dispatch states that on the 29th ult. fire in Caskey Bros.' foundry, Newport News, Va., did \$35,000 damages. But \$12,000 insurance was carried.

The Percival Iron Company, Los Angeles, Cal., have been incorporated with a capital stock of \$65,000, all fully subscribed. The directors are Catharine A. Percival, W. Percival, Phil. Percival, Olive P. Haskell and Walt. A. Guthrie, all of Los Angeles.

The Weston Engine Company's plant of Painted Post, N. Y., which has been shut down for several months, has been sold to the Rand Drill Company of Tarrytown, N. Y.

A mortgage of \$1,500,000 from the Walker Mfg. Company of Cleveland, Ohio, to the Central Trust Company of New York was filed with the County Recorder at Cleveland on Saturday, December 31. It is a second mortgage and is to secure an issue of bonds.

The Morgan Engineering Company, Alliance, Ohio, have delivered to the Government 20 of the 42 disappearing gun carriages for which the Government contracted last April. They have until next June to deliver the other 22, some of which are almost ready for shipment. The carriages are built for 8-inch, 10 and 12 inch guns, and are intended for coast defenses. The Morgan Engineering Company have 700 employees and are running their works night and day in all departments.

Hardware.

A new corporation have been organized at Rochester, N. Y., to manufacture steel baskets and measures of every description, as well as a general line of small galvanized iron and steel novelties and household utensils. They are known as the Metallic Basket Company, and have bought the patents, good will and other property of the Metallic Basket Company of Cedar Rapids, Iowa. Their specialty will be a corrugated and galvanized steel basket, made in various grades and sizes, and already patented. The corrugations extend from the top to the bottom of the basket and even around the curved edge of the bottom, thus, it is stated, giving the basket great rigidity and strength without increasing its weight correspondingly. It is also described as a very attractive article, water tight and as useful for many purposes for which the wicker or wooden baskets are not available. With rope handles and reinforced bottoms this basket is meeting with much favor among coal dealers who have examined it. The new company have located their Rochester works on Anderson avenue and will establish a large galvanizing plant. The machinery is entirely new in design and is being built in Buffalo. Many inquiries and a number of orders, we are advised, have been received from abroad for the larger sizes of corrugated steel baskets. The company's first customers will include Australian and South African buyers, and they expect to develop an extensive foreign trade. S. S. Cobb, who handled the business of the Cedar Rapids factory, is a director in the new corporation, and has removed to Rochester, where he will superintend the larger plant. Ample capital has been secured in Rochester for the enterprise, and it is hoped there that large works for the manufacture of all kinds of sheet metal goods may be the outcome of the venture.

An indication of better times in the bicycle business is shown in the size of orders now being received by some of the manufacturers. The Ames & Frost Company, makers of Imperial wheels, Chicago, state that they have just received an order for 800 bicycles for the coming season from Beard, Goodwillie & Co., Port Huron, Mich. The firm named have been agents for the Ames & Frost Company for several years and have had unvarying success in the sale of Imperial wheels. They usually buy the machines in large quantities, but this order is much greater than any ever before placed. A shipment of 500 wheels has been made, which is 100 or 150 more than any previous shipment to the firm.

The Iron and Metal Trades.

There is a continuance of activity in the Iron and metal trades, although, on the whole, the market is not quite as feverish as it has been. As a matter of fact, producers, loaded for many months to come, are keeping within a narrow circle of regular customers, and are inclined to discourage anything which might foster speculation. How heavily the Steel works are engaged is indicated by the fact that one large concern have 1,000,000 tons of orders on their books, while similar figures relatively are reported from other works.

One factor is now coming to the surface, and that is that the railroads, with the heavy tonnage offering, are withdrawing the special freight rates on Iron and Iron products, thus enhancing the delivered prices.

In the cruder materials the markets are relatively quiet at stationary prices. This is notably the case with Bessemer Pig Iron and with Steel Billets and Wire Rods.

In Finished Material, however, in which values have been lagging behind, the first impulse is coming. The Beam Association has advanced prices for Beams \$2 per ton and other forms of Structural Iron are also up. Bars are advancing, the large demand continuing. Our Chicago correspondent notes the sale of one block of 10,000 tons to an agricultural implement maker. Plates are stiffer and business is restricted by the inability to make deliveries. Chicago notes a sale of 60,000 tons, delivery at the seller's option.

In the Rail trade the Western mills have raised prices \$2 per ton, which seems to have clinched a number of outstanding options. The Pennsylvania Railroad is reported to have placed its order for 105,000 tons, distributed among the mills on the lines.

A meeting of Cotton Tie manufacturers is now being held in Pittsburgh to reach some arrangement by which the savage fight in Southern markets may be brought to a close.

In spite of the advancing tendency export orders continue to be placed, and a good deal of tonnage is being offered. A number of manufacturers express their determination to make sacrifices to hold the trade which they regard as very valuable.

It will be recalled that some time since the German Merchant Pipe combination—a tight and powerful organization—dropped prices in order to freeze out the American works which were invading the market. It is interesting to note, in view of this effort, that the National Tube Works Company of McKeesport, Pa., have just sold 400,000 feet of Pipe for delivery in Germany.

Beyond the facts already given in connection with the Wire consolidation, little that is new has transpired. The American Steel & Wire Company have practical control of the Cincinnati Barb Wire Company, the Pittsburgh Wire Company, the Rod and Wire plant of the Shenango Valley Steel Company and of the Cleveland Rolling Mill Company. Negotiations are still progressing with the Oliver interests at Pittsburgh and with the Washburn & Moen Mfg. Company. We understand that the capital stock of the American Steel & Wire Company, now \$24,000,000 equally divided between common and preferred, is to be increased to close to \$100,000,000, also equally divided between common and preferred. Report has it that negotiations are pending for a Steel plant in Central Ohio.

The American Tin Plate Company have not yet announced their selling policy, but an early settlement is looked forward to. It is stated that no comprehensive arrangements as to the supply of Tin Plate Bars for the whole requirements have been made, although certain sections are taken care of. Report has it that negotiations are pending with one Steel plant, and that the erection of new Steel works is under consideration as an alternative.

The success of recent consolidations is reviving many old efforts in that direction and is responsible for the appearance of new schemes, one of which is the concentration of a group of blast furnaces. The latter project has nothing to do with the movement by a syndicate to acquire control of the Virginia furnaces.

Tin has advanced sharply. Copper is at 13½ cents for Lake, and Lead is firmer. Tin Plate, preceding the fixing of prices, is still selling by the consolidation at \$2.75 at mill for 100-pound Cokes.

A Comparison of Prices

At date, one week, one month and one year previous.

Advances Over the Previous Month in Heavy Type.
Declines in Italics.

	Jan. 5, 1899.	Dec. 28, 1898.	Dec. 7, 1898.	Jan. 5, 1898.
PIG IRON:				
Foundry Pig, No. 2, Standard, Philadelphia.....	\$11.25	\$11.15	\$11.00	\$11.00
Foundry Pig, No. 2, Southern, Cincinnati.....	10.25	10.00	9.75	9.25
Foundry Pig, No. 2, Local, Chicago.....	11.00	11.00	11.00	11.00
Bessemer Pig, Pittsburgh.....	10.75	10.75	10.50	10.00
Gray Forge, Pittsburgh.....	9.50	9.50	9.25	9.00
Lake Superior Charcoal, Chicago.....	11.50	11.50	11.50	12.50
BILLETS, RAILS, ETC.:				
Steel Billets, Pittsburgh.....	16.25	16.25	15.50	15.00
Steel Billets, Philadelphia.....	18.55	18.50	17.25	17.40
Steel Billets, Chicago.....	17.50	17.50	17.00	17.50
Wire Rods, Pittsburgh.....	22.25	22.25	20.25	23.00
Steel Rails, Heavy, Eastern Mill.....	18.00	17.50	17.00	19.00
Spikes, Tidewater.....	1.40	1.40	1.40	1.50
Splice Bars, Tidewater.....	1.05	1.05	1.05	1.15
OLD MATERIAL:				
O. Steel Rails, Chicago.....	8.00	8.00	7.75	8.00
O. Steel Rails, Philadelphia.....	10.25	10.25	10.25	10.25
O. Iron Rails, Chicago.....	12.75	12.75	12.50	12.00
O. Iron Rails, Philadelphia.....	13.00	13.00	12.75	12.50
O. Car Wheels, Chicago.....	11.50	11.50	10.50	11.50
O. Car Wheels, Philadelphia.....	10.25	10.25	10.00	9.25
Heavy Steel Scrap, Chicago.....	7.75	7.75	7.75	7.50
FINISHED IRON AND STEEL:				
Refined Iron Bars, Philadelphia.....	1.15	1.15	1.10	1.15
Common Iron Bars, Youngstown.....	1.00	.95	.95	.95
Steel Bars, Tidewater.....	1.10	1.10	1.10	1.10
Steel Bars, Pittsburgh.....	1.00	.95	.95	1.00
Tank Plates, Tidewater.....	1.30	1.30	1.25	1.12½
Tank Plates, Pittsburgh.....	1.25	1.30	1.12½	1.00
Beams, Tidewater.....	1.40	1.35	1.35	1.30
Beams, Pittsburgh.....	1.30	1.30	1.20	1.15
Angles, Tidewater.....	1.25	1.30	1.30	1.15
Angles, Pittsburgh.....	1.15	1.10	1.10	1.00
Skelp, Grooved Iron, Pittsburgh.....	1.07½	1.07½	1.10	1.07½
Skelp, Sheared Iron, Pittsburgh.....	1.22½	1.22½	1.30	1.17½
Sheets, No. 27, Chicago.....	2.00	1.95	1.99	2.10
Sheets, No. 27, Pittsburgh.....	1.85	1.85	1.85	1.95
Barb Wire f.o.b. Pittsburgh.....	1.80	1.70	1.65	1.75
Wire Nails f.o.b. Pittsburgh.....	1.35	1.30	1.25	1.40
Cut Nails, Mill.....	1.12½	1.10	1.10	1.12½
METALS:				
Copper, New York.....	13.25	12.90	12.65	11.00
Spelter, St. Louis.....	4.75	.....	5.25	3.75
Lead, New York.....	3.92½	3.85	3.80	3.70
Lead, St. Louis.....	3.75	3.70	3.62½	3.55
Tin, New York.....	19.70	18.65	18.40	18.70
Antimony, Hallett, New York.....	8.75	8.75	9.00	7.12½
Nickel, New York.....	38.00	38.00	35.00	33.00
Tin Plate, Domestic, Bessemer, 100 lbs., New York.....	2.00	2.90	2.90	3.15

Chicago. (By Telegraph.)

Office of The Iron Age, 805 Fisher Building,
CHICAGO, January 4, 1899.

The leading features of the immediate situation are the advance in price of finished products and the stiffening of freight rates on the railroads. Good advances have been made on Steel Rails, Structural Shapes, Hoops, Nails and Wire. The demand has in all cases been the direct cause of these advances in price. The mills are crowded with work and the outlook is so highly favorable for additional business that manufacturers feel justified in endeavoring to secure a little better profit. The stiffening in freight rates is simply the restoration of full tariff rates and withdrawal of the special concessions which have been made to shippers. These concessions have varied with the different parties interested, so that no one knows positively that he was getting as low rates as his competitor. It is possible that Southern Pig Iron may still be delivered at concessions from the regular tariff, but the assertion is made that these concessions will very speedily be withdrawn. The excellent demand continues for all kinds of Iron and Steel.

Pig Iron.—The key to the situation is the price of Southern Iron. If all Southern manufacturers should maintain the rate named by the leading companies it would probably result in an early advance by these companies and by the local furnace companies. Some Southern sellers, however, seem to be still willing to make contracts under the regular quotations. Not enough sellers, however, are doing this to affect the entire market, which is a broad one at present, taking in a wide range of consumers in many lines. The sales of the past week have been quite large notwithstanding the fact that it was holiday week and the closing week of the year. The business included local and Southern Irons, considerable Iron from Ohio and also good quantities of Lake Superior Charcoal. We quote for cash as follows:

Lake Superior Charcoal.....	\$11.50 to \$13.50
Local Coke Foundry, No. 1.....	11.50 to 12.50
Local Coke Foundry, No. 2.....	11.00 to 12.00
Local Coke Foundry, No. 3.....	10.50 to 11.50
Local Scotch, No. 1.....	11.50 to 12.00
Ohio Strong Softeners, No. 1.....	12.00 to 12.50
Southern Silvery.....	11.00 to 12.00
Southern Coke, No. 1.....	11.35 to 11.50

Southern Coke, No. 2.....	11.10 to	11.25
Southern Coke, No. 3.....	10.75 to	10.85
Southern, No. 1 Soft.....	11.35 to	11.50
Southern, No. 2 Soft.....	11.10 to	11.25
Foundry Forge.....	10.10 to	10.25
Gray Forge and Mottled.....	10.10 to	10.25
Southern Charcoal Softeners.....	11.50 to	11.85
Alabama and Georgia Car Wheel.....	15.00 to	16.00
Jackson County Silvery, according to Sil- con.....	12.50 to	14.50
Bessemer Pig Iron.....	11.00 to	11.50
Malleable Bessemer.....	11.00 to	11.50
Spiegelsisen, 20 per cent.....	..... to	30.00

Bars.—Some contracts were placed for Bar Iron and very good contracts for Soft Steel Bars. One of the latter may reach 10,000 tons, and is understood to have been consummated by an implement manufacturer, the deliveries to be spread over the first half of this year. The volume of business in Bar Iron was not so great as in the preceding week, but inquiries were numerous, and it is expected that a very active trade will result from them this week. Mill shipments may be quoted on the basis of 1.10c. to 1.15c., Chicago, for either Common Iron or Soft Steel Bars. Hoops have been marked up to 1.15c., Chicago, base, for Bands. The market appears to have made an advance of \$1 per ton. Jobbers quote small lots from stock at 1.25c. to 1.30c. for Common Iron or Soft Steel Bars, with full extras quoted on Iron, while 3.10c. is named on Norway and Swedish Iron.

Car Material.—The demand for Car Material is as active as before, showing that the car builders continue to be steadily receiving fresh orders.

Structural Material.—A fine run of small orders was booked during the week, but nothing of remarkable size was noted. Prices have advanced on Shapes, and our quotations are changed to correspond. The advance is \$2 a ton on Beams and Channels, and \$1 on Angles, Zees and Tees. Mill shipments are quoted as follows, Chicago delivery: Beams and Channels, up to 15 inches, 1.45c. to 1.50c.; 18 to 24 inches, 1.55c. to 1.60c.; Angles, 1.35c. to 1.40c.; Universal Plates, 1.40c. to 1.45c.; Tees, 1.45c. to 1.50c. Small lots from store are selling at 1.80c. to 1.90c. for Beams and Channels, 15 inches and less; 1.40c. to 1.45c. for Angles, and 1.60c. to 1.65c. for Tees.

Plates.—About 6000 tons have been taken for delivery at the convenience of the local mill. The Illinois Steel Company have absolutely refused on the Australian order, having too much work ahead. Good business is also being received by outside mills from Chicago interests. Mill shipments are quoted as follows, Chicago delivery: Tank Steel, 1.25c. to 1.30c.; Flange, 1.30c. to 1.50c.; Marine, 1.55c. to 1.65c.; Common Fire Box, 1.75c. to 2c.; Best Fire Box, 2.50c. to 4c.

Merchant Pipe.—The advanced price has not checked business, as stocks are so badly broken that it will take some time to get them into proper shape. Mill shipments are as follows: Butt Weld Black, 55 per cent.; Lap Weld Black, 65 per cent.; Butt Weld Galvanized, 45 per cent.; Lap Weld Galvanized, 50 per cent., with an additional five 10's and 7½ off. Merchant Boiler Tubes are quoted at 65 and 5 per cent. off on 2 to 2½ inch, and 70 and 5 per cent. off on 2½-inch and larger.

Sheets.—Better trade is reported in both Black and Galvanized Sheets, with some stiffening in prices. Mill shipments, No. 27 Common Black, are quoted at 2c. to 2.05c., Chicago, and Galvanized, 80 and 7½ to 80 and 10 per cent. off. Small lots No. 27 Black, 2.20c., and Galvanized at 80 to 80 and 2½ per cent. off.

Merchant Steel.—Good business continues to come forward in Merchant Steel, notwithstanding the fact that the mills find it quite difficult to arrange for deliveries. Mill shipments, Chicago delivery, are quoted as follows: Smooth Finished Machinery Steel, 1.55c. to 1.65c.; Smooth Finished Tire, 1.45c. to 1.55c.; Open Hearth Spring Steel, 1.60c. to 1.75c., base; Sleigh Shoe, 1.30c.; Toe Calk, 1.70c. base; Ordinary Tool Steel, 5.50c. to 7c.; Specials, 10c. and upward.

Billets and Rods.—Billets are very scarce. The local manufacturers positively refuse to take orders from consumers whose trade they anxiously solicited but a few months back. The pressure on their finishing department is so great as to take their entire Billet production. Billets are nominally quoted here at about \$17.50 on the basis of Pittsburgh prices. The Wire Rod situation is not any better than that of Billets and Rods are nominally quoted at \$22.50 to \$23, but it is difficult to see where any can be obtained.

Rails and Track Supplies.—It is intimated that 1,500,000 tons of Steel Rails have been sold by all the mills for this year's delivery, and manufacturers have determined to secure an advance on additional orders, believing that fully 2,000,000 tons will be required by the country. They now quote \$20 on large lots of Heavy Sections and \$22 and upward for smaller quan-

ties and lighter sections. Considerable business has been booked in the past week, but it consisted largely of closing contracts on which terms had been made some time since. Track Supplies are quoted as follows: Splice Bars, 1.10c.; Spikes, 1.55c. to 1.60c.; Track Bolts, with Hexagon Nuts, 1.90c. to 2c.; Square Nuts, 1.80c. to 1.90c.; Steel Links and Pins, 1.45c. to 1.50c.; Iron Links and Pins, 1.45c. to 1.50c.

Old Material.—The stiffening in railroad freight rates is making quite a difference in the local market for Old Material. Consumers are not willing to pay more for Old Material at their works, and this compels dealers here to endeavor to meet their views by buying at lower prices from the source of supply. It is difficult to say just what the result will be, as the stiffening of freights is accompanied by a better demand. Dealers' selling quotations are nominally as follows, per gross ton: Old Iron Rails, \$12.75 to \$13; Old Steel Rails, mixed lengths, \$8 to \$8.50; selected long lengths, \$10 to \$11; Relaying Rails, \$14 to \$15; Old Car Wheels, \$11.50 to \$12; Heavy Melting Steel Scrap, \$7.75 to \$8; Mixed Steel, \$6 to \$6.50. The following selling prices are per net ton: No. 1 Railroad Wrought, \$11.75 to \$12.25; Dealers' Forge, \$9 to \$9.50; Fish Plates, \$12.75; No. 1 Mill, \$7; Heavy Cast, \$8.25 to \$8.50; Stove Plates, \$5.50 to \$5.75; Iron Car Axles, \$14.75; Horseshoes, \$9 to \$9.50; Cast Borings, \$4; Steel Axle Turnings, \$6.50; Iron Axle Turnings, \$7; Machine Shop Turnings, \$5.75 to \$6.

Metals.—Copper has made another advance, and carload lots of Lake are now quoted at 13½c., with Western at 13¼c. Spelter is quiet at 4.90c. to 4.95c. Pig Lead has been decidedly active and is now quoted at 3.80c. to 3.85c., with plenty of inquiries. The market has every indication of going higher.

Tin Plate.—Manufacturers are taking orders for moderate quantities in carload lots at \$2.90 for 100-pound Cokes, but appear indisposed to take large contracts at these figures. The policy of the American Tin Plate Company relative to prices has not yet been made known to the trade. Their action is awaited with much interest.

Cincinnati. (By Telegraph.)

Office of The Iron Age, Fifth and Main streets,
CINCINNATI, January 4, 1899.

So far as surface indications show the general situation is unchanged from what it was a week ago, and from a furnace standpoint it is regarded as eminently satisfactory. Buyers are grumbling a little at the advanced prices, but on the whole appear to be pretty well reconciled to what appears to be inevitable. The only really disgruntled people in the business are the agents, who are having a tolerably rocky time finding furnaces willing to accept orders at the ruling quotations. There are but few furnaces who are willing to accept orders for limited quantities of their standard brands from even well-known customers for delivery earlier than April 1 next. The majority of the furnaces, however, are practically out of the market for deliveries during the first half of the year. All the low grade brands are very scarce everywhere, and a furnace in position to accept orders freely would be a godsend to any agent in this district just at present. While the situation is stiffer in Southern circles than it is in the North, yet Northern furnaces are also getting pretty well filled up and many of them are showing about as much independence as is shown by their Southern brethren. Outside of the usual run of smaller orders but little business has been done during the past week. The smallness of the volume, however, is not due to any backwardness on the part of buyers, but almost altogether to the inability of the agent to place the orders. The largest order reported as accepted was for 1000 tons of Iron grading about No. 3 Soft, which was taken at 25c. above the Birmingham maximum basis. There are quite a number of inquiries in the field for large amounts, chiefly, however, for delivery after April 1 next. Some furnaces might be induced to accept a part of this business at an advance of 25c., but this the buyers are not as yet willing to concede. Prices are nominally unchanged, except that the minimum quotations hitherto carried on Southern Iron will have to be dropped, as there is no longer any Iron that can be had on that basis. Quotations f.o.b. Cincinnati are as follows:

Southern Coke, No. 1.....	..... to	\$10.50
Southern Coke, No. 2.....	..... to	10.25
Southern Coke, No. 3.....	..... to	9.75
Southern Coke, No. 1 Soft.....	..... to	10.50
Southern Coke, No. 2 Soft.....	..... to	10.25
Southern Coke, Gray Forge.....	..... to	9.25
Southern Coke, Mottled.....	..... to	9.25
Ohio Silvery, No. 1.....	..... to	12.50
Ohio Silvery, No. 2.....	..... to	12.25
Lake Superior Coke, No. 1.....	..... to	11.50
Lake Superior Coke, No. 2.....	..... to	11.00

Car Wheel and Malleable Irons.

Standard Southern Car Wheel.....	..... to	\$14.25
Lake Superior Car Wheel and Malleable.....	..... to	14.00

The car shortage is still causing as much trouble as ever.

Plates and Bars.—The market is steady and active with no appreciable change in quotations. We quote, f.o.b. Cincinnati: Bars, wholesale, 1.20c. to 1.25c., with half extras; Bars, retail, 1.35c. to 1.50c., with full extras; Plates, wholesale, 1.45c. to 1.55c.; Bar Angles, 1.25c. to 1.40c.; Sheets, No. 27, 2.10c.; Sheets, No. 10, 1.70c.

Old Material.—While the market is not so active as it has been recently, yet it is apparently losing none of its strength. Just at this time offerings are a little bit lighter than they have been and not much business is anticipated for the next two weeks. We quote, f.o.b. Cincinnati, buying prices: No. 1 Wrought Railroad Scrap, \$10.50 to \$10.75; Cast Scrap, \$7.50 to \$8; Car Wheels, \$10.25 to \$10.50; Iron Axles, \$14.50 to \$15; Iron Rails, \$12 to \$12.25; Steel Rails, \$8.50 to \$8.75.

Pittsburgh.

Office of The Iron Age, Hamilton Building, {
Pittsburgh, January 4, 1899. }

(By Telegraph.)

Pig Iron.—There is practically nothing doing in Bessemer Pig Iron, the leading consumers being covered, the few sales being made being small lots and at prices ranging from \$10.35 to \$10.40, Valley furnace. The furnaces all have a good deal of Iron sold for future delivery and the situation is not likely to show much change for some little time. The market is firm. There is a good deal of activity in Gray Forge and prices are firm at \$9.50, Valley furnace, and \$9.50 to \$9.65, delivered in Pittsburgh district. Foundry Irons are a little more active and are slightly higher in price. We quote Bessemer Pig at \$10.35 to \$10.40, Valley furnace; Gray Forge, \$9.50, Valley furnace; No. 1 Foundry, \$10.75 to \$11; No. 2 Foundry, \$10.25 to \$10.50; Gray Forge, \$9.50 to \$9.65; Bessemer, \$10.75 to \$10.90, all f.o.b. Pittsburgh district. We note a sale of 600 tons of Bessemer at \$10.40, Valley furnace.

Steel.—There is a good deal of inquiry for Steel, but the high prices quoted by the mills are causing buyers to hold off in the hope that they will be able to do better after a while. However, the Steel mills in the Pittsburgh and Valley districts all have a great deal of tonnage on their books, and several leading producers are practically out of the market as sellers. We quote Billets at \$16.25, maker's mill, Pittsburgh or Wheeling districts.

Sheet Bars.—A good many of the Tin Plate plants taken over by the American Tin Plate Company have started up in the past week and specifications for Sheet Bars on old contracts are coming forward more freely. There is practically nothing doing in new business in Bars, and in the absence of sales we quote nominally at \$17, maker's mill.

Spelter.—The market is firmer. Spelter in the Pittsburgh district on Monday sold at 4.80c., but is quoted this morning at 4.85c.

(By Mail.)

The first week in the new year finds the Iron trade in a condition of great activity, and the principal feature of the situation since our last report has been the advance in prices made on some lines of Finished Material. Beams and Channels have been advanced \$2 a ton and other Shapes \$1 a ton, taking effect January 1. Wire Nails have been advanced to \$1.35 minimum, f.o.b. Pittsburgh, Barb Wire to \$1.80 and Annealed Wires to \$1.20. Billets are also higher and \$16.50, Pittsburgh, is the minimum of the market. Prices all along the line are very strong and the market is rapidly assuming the phases of a boom, which may carry prices still higher than they are now. The conservative element in the trade are endeavoring to stem the tide, believing that prices on the present basis are plenty high enough and afford sufficient margin of profit. It is pointed out that if higher prices are made it will interfere seriously with foreign trade, and it is recognized that this must be held at all hazards. With Bessemer Pig at \$10.50 furnace, Billets at \$16 and higher at maker's mill, and other forms of Finished Material at present prices there is a good profit to a well managed plant, and this is certainly preferable to putting prices unduly high, and then to have the reaction which inevitably follows. In fact, we have knowledge that it is the policy of several of the

leading concerns not to advance prices further, if possible to keep from doing so. Since our report of last week it is stated that the leading consumer of Billets has placed contracts for fully 125,000 tons.

Ferromanganese.—As noted in this report several weeks since, an understanding exists among the producers of Ferro. Prices have been advanced and we now quote domestic Ferro 80 per cent. at \$50 in lots of 100 tons and over, and \$52.50 in carload lots, delivered at buyer's mill. We quote Spiegel at \$23 delivered in carload lots.

Structural Material.—On Saturday, December 31, after telegraphic consultation between the six mills composing the Beam Association, it was decided to advance prices on Beams and Channels \$2 a ton and on other Shapes \$1 a ton. No large jobs have recently been placed, but the general demand is good and the aggregate tonnage considering the season of the year is large. We quote Beams and Channels, 3 to 15 inch, 1.30c.; 18, 20 and 24 inch, 1.40c.; Angles, 1.15c.; Zees, 1.25c.; Tees, 1.30c.; all f.o.b. Pittsburgh.

Plates.—A heavy tonnage continues to be placed and the Plate mills are filled up with work as they never have been before. A leading local mill has recently entered several very large contracts for Plates for steel cars, aggregating many thousand tons. A great deal of tonnage is in sight, and there seems to be a considerable shortage in capacity for making Universal Plates. Work is being pushed as fast as possible on the large Universal mill under erection by the Carnegie Steel Company. The general tone of the market on Plates is strong and we quote Tank, $\frac{1}{4}$ -inch and heavier, 1.25c.; Flange, 1.35c. to 1.40c.; Marine, 1.45c. to 1.50c.; Ordinary Fire Box, 1.65c. to 1.75c.; Locomotive Fire Box, 2.75c.

Bars.—Owing principally to the sharp advance in Billets, and also to the good demand, prices on Steel Bars have been advanced and the minimum of the market is 1c., with some mills holding firmly to 1.05c. The tonnage is large and the capacity of the Bar mills is fully employed. The demand for Iron Bars is heavy, the requirements of the car builders being large, while general consumers are also placing heavy orders. Prices on Iron Bars are firm and we now quote at 1c. at mill. For very desirable specifications it might be possible to slightly shade this price.

Merchant Steel.—The mills are full of work, principally, however, on old contracts. The demand from the general trade is fair. Prices are strong and it is intimated that on some lines there will soon be an advance. We quote: Tire Steel, 3-16 to $\frac{3}{4}$ inch and heavier, 1.15c. to 1.20c.; Toe Calk, 1.30c. to 1.35c.; Plow Slabs, 3-16 inch and lighter, 1.25c. to 1.30c.; Spring Steel, 1.25c. to 1.50c., depending on quality; Machinery Steel, 1.30c. to 1.35c.; Cutter Shoes, 2.15c. to 2.25c.; Rolled Lay Steel, 2 $\frac{1}{2}$ c.; Hammered Lay Steel, 2 $\frac{3}{4}$ c.; Cant Hook Steel, Open Hearth, 2 $\frac{1}{2}$ c.; Crucible, 3c.; Tool Steel, ordinary grades, 4 $\frac{1}{2}$ c. to 6c.; extra grades, 9c. and upward, all 60 days or 2 per cent. off for cash.

Sheets.—Reports regarding the condition of the Sheet trade are somewhat conflicting. Some mills state that they are having a much better demand and are able to secure slightly higher prices. Other makers, however, claim that they have not as yet been able to notice any perceptible improvement in the condition of the trade. It is a fact, however, that a good deal of tonnage has been placed with the mills for shipment running over the first half of the year. We quote No. 27 Black Sheets, box annealed, one pass through cold rolls, at 1.85c.; No. 28, 1.90c., and these prices can be regarded as the minimum of the market. Some mills that are well filled up are understood to be quoting higher prices. The demand for Galvanized Sheets is good, and we quote for ordinary lots 80 and 10 per cent. off, with usual freight allowance.

Rods.—The large consumers of Rods are pretty well covered for some time, but there is an active inquiry from the smaller buyers for lots ranging from 100 to 500 tons. The higher prices for Billets have caused an advance in Rods and we now quote ordinary Bessemer Rods at \$23, maker's mill, Pittsburgh.

Iron and Steel Skelp.—The demand for Iron and Steel Skelp is good and the tone of the market is strong. We quote Grooved Steel Skelp 1c. to 1.05c.; Sheared Steel Skelp, 1.12 $\frac{1}{2}$ c. to 1.15c.; Grooved Iron Skelp, 1.07 $\frac{1}{2}$ c. to 1.10c.; Sheared Iron Skelp, 1.22 $\frac{1}{2}$ c. to 1.25c.; Ordinary Basic Steel Sheared Skelp, 1.15c.; Special Quality Basic Steel Sheared Skelp, 1.25c., all f.o.b. Pittsburgh, four months or 2 per cent. off for cash.

Pipes and Tubes.—No large contracts have recently been placed in the Pipe trade, but the aggregate tonnage is large and the mills are full of work. December was a record breaker in the Pipe trade, both as regards shipments by the mills and tonnage entered. Makers of Pipe refer to the present condition of the trade as being excellent and the outlook for 1899 is that the tonnage will be

the heaviest ever known. Prices are strong and we quote Merchant Pipe as follows: Butt Black, 55 per cent.; Lap Black, 65 per cent.; Butt Galvanized, 45 per cent.; Lap Galvanized, 50 per cent. Additional discounts are five 10's and 7½ per cent. for small lots, and five 10's and 7½ and 5 per cent. on carloads. The demand for Oil Country goods continues active and we quote Screw and Socket Joint Casing at 60 and Inserted Joint at 60 and 10 per cent., with an extra discount of 2½ per cent. to dealers. The demand for Boiler Tubes is fair considering the season of the year, and prices are unchanged. We quote 1½-inch and smaller at 60 and 5 per cent.; 1¾, 2 and 2½ inch, 72½ and 5 per cent., and 2½-inch and larger, 75 and 5 per cent.

Connellsville Coke.—Last week there were 14,967 ovens in the Connellsville region in blast and 3496 idle, the production being 159,655 tons, the heaviest output in any one week for a considerable time. The Puritan Coke Company fired 30 ovens at Baggailey, making 380 in operation at that plant out of a total of 400. We continue to quote Standard Connellsville Furnace Coke at \$1.60 per ton at oven for first six months of this year. We quote Foundry Coke at \$1.75 to \$2.30, depending on quality.

Birmingham.

BIRMINGHAM, ALA., January 2, 1899.

The old year went out leaving the Iron market in a condition quite unique, inasmuch as there is in its previous history nothing just like it. Usually from the middle of December (and often earlier) until after January is well turned there is almost a suspension of business and the accumulation of stocks. Usually the anxious ones are the sellers, who are keen to make a hole in their stock piles. This year the buyers have been the ones to manifest a keen interest in the market, and the sellers to play the indifferent. We have three of our furnace interests which have lately withdrawn from the general market, either by declining to name prices altogether, or from having sold to capacity to deliver in the future in the limit of accepted time. This does not mean that they refuse to sell to regular customers, who go direct and whom they feel obliged to care for. As a rule they buy in moderate lots and their needs must be supplied. One interest reports that Northern competition the past week again took business from them, their quotations being on the Birmingham published basis. But it does not make prices the least bit elastic here. They are, on the contrary, rigid with a prospect of stiffening. In a further advance of Iron here there are other collateral issues that may "bob up serenely" and have some influence on the profits. No one can tell when they will be demanding consideration and acquiescence, and no one is anxious to take too many chances on far away deliveries based on current values. It is a very difficult matter to quote market values. Each interest has its own market, and the majority of sales are at prices represented by the cabalistic characters P. T. No figures could be obtained of actual transactions, but if one guessed that some were made on the basis of \$1.25 for Gray Forge the sales books would confirm its correctness. As to stocks, what has been said in these letters on that point, for this date, is confirmed by the leanness of the furnace stock yards. What stock can be offered is of no moment. For all practical purposes stocks can be reported, as they are, in fact, purely nominal. In Warrants there has been no movement and no inquiry and no offerings. The fact was developed by close inquiry that present current market yet showed a serious loss in blocks on Warrant yards, as it would require an advance of \$1 to \$1.50 to let out some holders without loss, and for some accumulated interest and storage charges run the cost close to \$9 for Gray Forge. The nerve that has held on so far will probably induce a further holding to get out at least even.

There has been some export trade booked the past week, but not much. There was no dissatisfaction, either, as to price on the part of the seller, as ocean room was offering freely at reduced rates. But comparatively little of it could be taken simply because the Iron was *non est*.

The fire at Ensley, that damaged the Semet-Solvay plant, was greatly exaggerated in the press reports sent out. As it cooled down workmen were at once put to removing the debris, and high officials came promptly to ascertain the damage and arrange for rebuilding and replacing injured parts. To say that the officials notified the Tennessee Company that they would be delivering Coke to them again in a week or ten days is evidence that the damage will be speedily repaired. It may amount to \$50,000 and it may be only \$25,000, and the interruption to current operations will be only of slight temporary duration.

Some contracts have been closed with interests removing here, the most notable one being the wood work-

ing machinery plant from Du Quoin, Ill. The rolling mills report a world of business, in which nothing is unsatisfactory but the profits. They point to the fact that while crude Iron and Steel have both scored an appreciable advance there has been no corresponding advance in finished Iron and no sign of any movement to that end. The author of the report sent out that in the reorganization of the affairs of the rolling mill bonds for \$200,000 will be issued is a bad guesser. It will take \$200,000 alone to rehabilitate the mill and put it in line with competing interests, and an addition of \$300,000 to the working capital is necessary to clean up outstanding matters and make affairs easy in the office. And in the reorganization of affairs there will be no "penny wise and pound foolish" plan evolved. The interests involved are too great and the business ability engaged in evolving a plan for a solid business footing is too far seeing to use a scantling prop when a solid beam is needed. As evidence of the improved condition of affairs in the business world the yearly report of the Clearing House here shows an increase of \$2,000,000 over 1897. The Alabama Car Service Association will show a very appreciable increase in the number of cars handled during the year. The trolley lines of railroads have spent approximately \$350,000 in betterments and extensions. Wherever you go practical evidence greets the eye of free expenditure of money on the line of lasting and permanent improvements.

Five million dollars will not cover the amount of capital invested here during 1898. As great a year as it has been, the year we now commence gives every evidence of being the banner year in our history, both in volume of business and in the investment of capital. All classes of our population are thoroughly imbued with the idea that we are bound to grow with giant strides until we reach the climacteric in being gazetted as the largest city of the South in population, and the largest in varied industries and the leading one in wealth. We are drawing on the West and on the East for brawn and brain and money, and the benefit of the accompanying energy, enterprise, faith and works will be visible on every hand "as the years roll slowly by." There is nothing pessimistic in the outlook here. Only optimistic glasses, gold rimmed, command attention.

St. Louis. (By Telegraph.)

Office of The Iron Age, 512 Commercial Building, St. Louis, January 4, 1899.

The seasonable intent to do good this year has given place to the actual doing, and a scrutiny of the sources which have combined to send an unusual number of orders to mills and factories clearly shows the widespread awakening of the domestic trade. It is an actual fact that concerns in the interior who have been slumbering during the past few years have awakened to the knocking of commerce on the door, and the call is so frequent that constant action of the energies is demanded.

Pig Iron.—The good business of the preceding days of the month obtained after Christmas, and very satisfactory sales have been recorded. The proportion of orders to tonnage is higher and indicates therefore a more even distribution of business, which is distinctly a better circumstance than obtained in the past, when fewer mills with superior equipments and the determination to keep them on the move really created a market through the quoting of low prices. A firmer feeling is manifested in prices and buyers do not hesitate much in placing orders beyond the natural inclination to at first resent paying more than they did the last time. We quote as follows for cash f.o.b. cars St. Louis.

Southern, No. 1 Foundry.....	\$11.00 to \$11.25
Southern, No. 2 Foundry.....	10.50 to 10.75
Southern, No. 3 Foundry.....	10.00 to 10.25
No. 1 Soft.....	10.75 to 11.00
No. 2 Soft.....	10.50 to 10.75
Gray Forge.....	9.75 to 10.00
Mottled.....	9.75 to 10.00

Bar Iron.—Prices are on the increase and are being generally accepted in anticipation of further natural advance. The demand is encouraging, and orders are more numerous. Mills quote 1.15c. for carload lots, half extras, and jobbers quote 1.25c. for carloads. Small lots from stock are quoted at 1.35c.

Structural Material.—An advance of from \$1 to \$2 a ton has been made all along the line and mills are reported as being more than comfortably filled with orders. Heavy Shapes find first place in importance of demand, with Sheets and lighter material well to the front.

Rails and Track Supplies.—The general stiffening in price of new material may show a good feeling in Old Iron Rails, but no marked sales can be noted, the quotation being at \$12, and for Old Steel Rails of long lengths. \$9. Old Car Wheels still remain at \$12 to \$13. Prices on Track and Rail Supplies are as follows: Splice

Bars, 1.10c. to 1.20c.; Track Bolts, with Hexagon Nuts, 1.90c.; with Square Nuts, 1.80c.; Iron Links and Pins, 1.55c.; Steel, 1.55c. to 1.60c.; Spikes, 1.60c.

Pig Lead.—No sales are noted, due in part to wants having been forestalled pending action of railroads on the tariff. Quotations are at 3.75c. to 3.77½c.

Spelter.—The market is rather weak at 4.75c., with little anxiety on part of either buyer or seller to sign papers.

Cleveland.

CLEVELAND, OHIO, January 3, 1899

Iron Ore.—Hope of any non-Bessemer Ore agreement for 1899 was abandoned at the final meeting of the interests held in this city last week. Where some weeks previously there had been a strong feeling even among conservative participants in the Ore business that a non-Bessemer association was not only possible this year, but even probable, last week there came about a general agreement to disagree. No very serious effort to pull together was manifest. Interests proved too diverse, conditions too varied, special advantages too highly individualized. It turned out that the crowd could not agree on allotment, on prices, on anything. But the feeling is that by reason of the changed business conditions there will not be the savage cutting of prices that came early last season. Wages will necessitate some higher quotations, and the experience of the past fall is counted on as likely to have its effect. A heavy general demand, it is also believed, will support the market as well as any organization. The Bessemer interests are still waiting to see what will develop out of the industrial and trade situation before any attempt is made to fix terms of trade for the ensuing season.

Pig Iron.—Consolidation developments in the Steel plane of the industry are given credit for some hesitancy on the part of furnaces to transact business just at present involving summer deliveries. The Wire consolidation, in view of its recent extension of proprietorship in new directions, is confidently expected to take in some of the Valley furnace capacity by way of filling out its own productive equipment, or else to erect equipment of equivalent capacity. Valley furnace interests are watching with some concern for any possible developments of this character. It is asserted strongly in some quarters that a good control of the Cleveland rolling mill, with its 800 or 900 tons a day of Iron capacity, has already by actual purchase passed into the hands of the Wire consolidation, and that the corporation is under obligations to purchase the remainder of the stock on January 18, at the option of the minority stockholders. By this view stories of a possible withdrawal by the Wire people, or purchase contingent upon success in acquiring other properties, are regarded as ridiculous. The price is the same as that which the underwriters of the original consolidation deal did not then care to pay—\$5,000,000. The sale is a cash transaction. Foundry Iron has stiffened to \$10.25, Valley furnace, for No. 2, and deliveries are hard to get.

Finished Materials.—Specifications on Structural Material contracts are coming in heavily, and some fair new orders for bridge work have been received. Several hundred tons for a steamer to be turned out at a Black River yard made up part of the week's business, which was considerable before the announced advance of \$1 on Angles and \$2 on Beams and Channels. A good Cleveland business attends the Pipe advance.

The Belgian Iron Market.

BRUSSELS, December 17, 1898.—The situation in the Belgian metallurgical industries has improved a good deal during the last month. It is really brilliant, and the year closes under the most favorable auspices, giving rise to excellent expectations for the year 1899.

What is of specially good promise is that the improvement is general. It is observed not alone in Belgium, but in Germany, England and in France, as well as all the other countries in Europe—Russia, Spain, Italy, Sweden, Austria-Hungary, the Danube principalities, &c. This unanimity clearly shows that the improvement is not due to speculation or to temporary causes, but that it has, on the contrary, a deep and solid foundation, that it is due to the strength of a universal demand growing out of the opening of new markets, the development of new requirements and the starting of great works of other places, without counting the increase in the fleets and in armaments.

So far as we are more particularly concerned in Belgium, I must state that the home demand has become very active. All the Nut and Bolt works, all the engi-

neering shops, the bridge works, car and locomotive shops are so loaded with orders that they find it impossible to make deliveries. They are forced to ask for delays. The exports are also increasing regularly. So far as Iron and Steel rolling mill products are concerned, the exports have increased during the first 11 months of 1898 to 489,000 metric tons, as compared with 475,000 tons during the same months of 1897. In the beginning of the current month the export requirements have developed in an unexpected manner, while usually this month is exceedingly dull. Therefore the exports of December and of the first months of 1899 will show a very marked progress over those of the corresponding period a year since. This explains why the rise is greater for export than it is for the home markets. Pig Iron notably is in a very enviable position. The Coke Syndicate, as already reported, has consented to a lowering in price of 1 franc per ton, and this reduction had hardly been made when Pig Iron commenced to rise in price. Mill Irons are now 54 francs in Belgian Luxemburg and 58 francs at Charleroi. The greater number of the producing mills have covered at the latter price, not alone for the first half of 1899, but also for the whole second half wherever they found it possible to do so. I believe that they have done well because the Grand Duchy of Luxemburg and Eastern France, as well as certain Belgian blast furnaces who were discounting a still further rise, have absolutely refused to meet the price. Now every week brings us the news of a further increase in price of 50 centimes to 1 franc. It is impossible to state where this movement will cease.

So far as Foundry Irons are concerned, they follow the movement of the English market, being firm at 59 francs, and even 60 francs has been paid to my knowledge. Thomas Iron is held firmly at 67 francs. The result of the preceding state of affairs is that during one month we have witnessed a rise in Foundry Iron of 3 to 4 francs, in Mill Iron 2 francs and in Thomas Pig 2 francs. Out of the 46 furnaces in Belgium 31 are in blast and 15 out. Eighteen furnaces are making Iron for Steel purposes, 10 are running on Forge and 3 on Foundry Iron. The production has been 939,000 tons for the first 11 months of 1897 as compared with 898,000 tons in 1898, thus showing a reduction of 41,000 tons. The imports during the same time have risen from 263,000 tons to 292,000 tons, an increase of 29,000 tons only. There has, therefore, been a supply to the Belgian rolling mills and foundries of 1,191,000 in 1897 as against 1,176,000 in 1898, a falling off of 15,000 tons, although the output of Iron, Steel and foundry products in Belgium is increasing. Pig Iron, therefore, has been scarce, and this explains the rise.

I note with regret that the importations of American Pig Iron are diminishing, having fallen from 14,326 tons in 1897 to 4924 tons in 1898. The same is true of Blooms and Billets. They are really scarcer, still the home Steel works are so overloaded with orders that they cannot sell to the outside mills, and the German and French works are not offering anything. Under the circumstances the minimum prices for Blooms are 11.25 francs and for Billets 12.50 francs per 100 kg.

Passing to finished products, we note that No. 2 Bars sell in the home market at 140 francs per ton, a rise of 5 francs during one month. For export they are held at 135 francs, a rise of 7.50 francs. Beams, which did not follow the movement, are now at the same price as No. 2 Bars. Angles are quoted at 147.50, a rise of 7.50 francs. Sheets have advanced 5 francs during the month, and the same is true of Rails.

Our producers decline to enter into any long engagements even at these prices, feeling that a further rise is at hand.

New York.

Office of The Iron Age, 232-238 William street, }
NEW YORK, January 4, 1899. }

Pig Iron.—The market continues active and shows an advancing tendency. Sellers are indifferent and are chiefly engaged in taking care of deliveries in which there is some irregularity. The leading Lehigh company have further advanced prices 25c. per ton. The announcement is made that a number of additional furnaces are to blow in the Schuylkill and Lehigh Valleys, but they all are of small capacity. We quote, at tidewater: No. 1 X Foundry, \$12; No. 2 X, \$11.50; No. 2 Soft, \$11.25; No. 2 Plain \$11; No. 3 Foundry, \$10.75, and Gray Forge, \$10.50. Southern brands, tidewater delivery, are nominally: No. 1, \$11.25 to \$11.50; No. 2, \$11 to \$11.25; No. 1 Soft, \$11 to \$11.25; No. 2, \$10.75 to \$11; Gray Forge, \$10; Basic, \$10.75 to \$11.

Steel Rails.—It is reported that the Pennsylvania Railroad has placed orders for 105,000 tons, which are as usual distributed among the mills along the lines of the road. Otherwise the market has been quiet, although we note some good inquiries from roads taking deliveries on the

Gulf. The demand for Girder Rails is high. The market is firmer and we quote \$18 at Eastern mill for Standard Sections.

Track Material.—We continue to quote 1.05c. to 1.10c. for Angle Bars, 1.35c. to 1.40c. for Spikes and 1.60c. to 1.65c. for Bolts.

Finished Iron and Steel.—Quite a lively demand is noted for Bridge Material, among the orders being 5000 tons for the Baltimore & Ohio Railroad. We quote for large lots on dock: Beams, 1.40c. to 1.50c.; Angles, 1.25c. to 1.30c.; Universal Mill Plates, 1.30c.; Tees, 1.45c. to 1.50c.; Channels, 1.35c. to 1.45c.; Steel Plates are 1.30c. to 1.35c. for Tank, 1.35c. to 1.40c. for Shell, 1.40c. to 1.45c. for Flange, 1.60c. to 1.70c. for Fire Box, and 2.25c. to 2.50c. for Locomotive Fire Box, on dock. Charcoal Plates are 2.25c. for Shell, 2.75c. for Flange, and ½c. advance for Fire Box quality. Refined Bars are 1.15c. to 1.20c., and Common Bars are 1.07½c. to 1.10c. on dock. Soft Steel Bars, 1.10c. to 1.20c.; Steel Axles, 1.40c. to 1.50c.; Scrap Axles, 1.50c. to 1.70c.; Links and Pins, 1.50c. to 1.60c.; Hoops, 1.17½c. to 1.20c.; Best Iron Boiler Rivets, 2.25c. to 2.50c., delivered; Steel Structural Rivets, 1.75c. to 1.85c.; Cotton Ties, 60c. to 65c. per bundle at mill.

The Cambria Steel Company, having leased the Cambria Iron Company's works, have consolidated their New York offices (heretofore at 100 Broadway and 33 Wall street) at the new Empire Building, 71 Broadway, rooms 1705 and 1706. H. L. Waterman has been appointed general sales agent for New York City and vicinity, but he will give special attention to the sale of Structural Steel, Steel Blooms, Billets and Slabs. W. A. Washburne will give attention to negotiations for Steel Rails and Railway Track Fastenings and L. R. Pomeroy will give attention to Steel Axles and to other Forging Specialties.

Thos. F. Russell, 102 Chambers street, will sell as heretofore the special products of the Gautier department.

Metal Market.

Office of *The Iron Age*, 232-238 William street, (New York, January 4, 1899.)

Pig Tin.—The upward flight of prices which commenced last week continued with a wild rapidity throughout the entire week. At the close of the last business day of last year, December 30, quotations in this market had reached 19c. On Tuesday morning the market opened 19.65c. to 20c., and at the close to-day the hysterical movement had not yet ceased, the price quoted being 19.70c. to 20c. The London market advanced in even greater proportions, jumping from £85 7s. 6d. on the 29th ultimo to £86 1s. 3d. the day following. At the opening of the market on January 2 the figures had reached £87 17s. 6d. On the day following the quotation was £89, and at the close to-day has settled to £88 5s. for spot and £89 1s. 3d. for three months' futures. It is stated that the heavy London advances were due at first to the covering of short contracts, and that the later advances which came with the new year are based on the small shipments and a largely reduced visible supply.

Below we give the total statistics for Europe and the United States, as compiled by the exchange, showing:

Total visible supply January 1, 1899 20,131 tons
Against total visible supply December 1, 1898 21,713 tons
Against total visible supply January 1, 1898 29,855 tons

Monthly Statistics.

	In tons of 2240 pounds.	
	Dec.	Nov.
Shipments during		
Straits to Great Britain.....	900	500
Straits to Continent Europe.....	500	1,300
Straits to United States.....	1,450	1,800
Totals from Straits.....	2,850	3,600
Australia to Great Britain.....	230	300
Australia to United States.....	nil	nil
Totals from Australia.....	230	300
Consumption, London deliveries.....	1,090	1,040
Consumption, Holland deliveries.....	1,044	1,126
Consumption, United States, excluding Pacific ports.....	2,200	2,700
Totals.....	4,334	4,866
Stock, London.....	8,375	8,385
Stock, Holland.....	3,827	4,344
Stock, United States, excluding Pacific ports.....	1,800	2,390
Total stock at the close of month.....	13,902	15,119
Afloat, London.....	1,412	1,836
Afloat, Holland.....	1,592	1,238
Afloat, United States, excluding Pacific ports.....	3,225	3,475
Total afloat at the close of month.....	6,229	6,548
	Jan. 1,	Dec. 1,
	1899.	1898.
Total visible supply.....	20,131	21,703

Copper.—Steady advances have been taking place in this market, and with a good demand from both home

consumption and export prices have reached 13¼c. to 13½c. for Lake Superior Ingots. Electrolytic Ingots, Wire Bars and Cakes have advanced to 13¼c. to 13½c., and Casting has reached 12¾c. to 13c. In connection with this stiff position it is stated that the large producers are fully engaged for about two months to come, so that spot and nearby delivery are difficult to obtain. The London market advanced from £56 15s. 9d. of last week to £58 3s. 9d. for spot and £58 10s. for three months' futures. Best Selected has advanced to £62, a rise of £1 10s.

The exports of domestic Copper from New York and Baltimore for the month of December, as per Custom House returns, were as follows:

	Copper.	Matte.
From New York.....	6,737 tons	417 tons
From Baltimore.....	4,052 tons	..... tons
Totals.....	10,789 tons	417 tons

Reducing the Matte at 55 per cent. into fine Copper, the total exportation for December amounts to 11,018 tons of 2240 pounds.

During the same month the following arrived at this port:

From Europe.....	624 tons Bars, &c.
Mexico.....	697 tons Bars
Mexico.....	90 tons Matte
Newfoundland.....	1,775 tons Ores
Total exports since January 1, 1898, exclusive of Southern ports for December.....	129,732 tons
Against same period in 1897.....	123,993 tons

Below we give the European statistics of Copper for second half of December, received by special cable. The figures show an increase of 1100 tons on December 30, as compared with December 15:

Stocks—	In tons of 2240 pounds.	
	Dec. 31.	Dec. 15.
Liverpool and Swansea, Chili Bars, &c.....	14,630	14,450
Liverpool and Swansea, other and English.....	4,030	3,410
London, including landing.....	800	800
France.....	2,900	2,900
Totals.....	22,360	21,560
Afloat from Chili.....	3,006	2,800
Afloat from Australia.....	2,600	2,500
Totals.....	27,966	26,860
Supplies, all Europe—		
Total for the month.....	22,600	10,600
Of which Chili charters.....	1,800	700
Of which from North America.....	14,200	8,200
Deliveries, all Europe.....	21,600	10,600

Pig Lead.—Has held firmly, with a good demand and advance to 3.92½c., with sales reported at that figure. The market at the moment is somewhat quieter, but quotations for spot and nearby range between 3.90c. and 3.95c. St. Louis quotes 3.77½c. to 3.80c. London comes at the close to-day £13 2s. 6d. for spot Soft Spanish.

Arrivals at this port for the month of December amounted to about 5700 tons from Mexico, 35 tons from Peru, 10 tons from London. Exports in bond from Atlantic ports were 4799 tons to Europe.

Spelter.—Was a little weak throughout the last few days of last year, but opened up with the new year with a firmer tendency, perhaps in sympathy with the advances made in other metals. At this writing the market is quoted 5.15c. to 5.25c. for spot and 5c. to 5.10c. for futures. St. Louis is quiet, with prices still down at 4.75c., but we understand that the metal is difficult to buy at that figure. London has advanced to £24 5s., which is 15 shillings higher than last week's quotation. The market is quoted very firm. Ores have declined \$2 per ton and were quoted at the close of last year \$29.50. Taking the entire Spelter situation as a whole, the market is in a rather unsettled condition.

Antimony.—There has been no change, and Hallett's and Japanese are quoted at 8¼c. Cookson's prices remain firm at 9¼c. to 9½c.

Nickel.—Is firm with prices unchanged at 38c. to 40c., according to quantity and delivery.

Tin Plate.—The market has strengthened somewhat. A business has been put through this week which was larger than that of any week for some time. Advices from Chicago state that the new company are taking orders at present at 2.75c. at mill for carload lots of 100-pound Cokes. Nothing has been heard as to the attitude which the new company will assume, and it is generally stated in the trade that the meeting was adjourned with the members in a "nothing to say" mood. We quote J. B. Grade American Tins, 14 x 20:

	F.o.b. Pittsburgh District.
Bessemer Steel, full weight.....	\$2.87½ to \$2.92½
Bessemer Steel, 100 lbs.....	2.75 to 2.80
Bessemer Steel, 95 lbs.....	2.70 to 2.75
Bessemer Steel, 90 lbs.....	2.65 to 2.70
Bessemer Steel, 85 lbs.....	2.60 to 2.65
Bessemer Steel, 80 lbs.....	2.55 to 2.60
Charcoal Tonne, same delivery—	
20 x 28, ordinary.....	5.40

QUOTATIONS OF IRON STOCKS DURING THE WEEK ENDING JANUARY 4, 1899.

	Sales.	Thursday.	Friday.	Saturday.	Monday.	Tuesday.	Wednesday.
Am. S. & W., Common.....	41,171	45 -47½	46½-48½	.....	.....	44 -49	44½-45½
Am. S. & W., Pref.....	18,615	108 -112½	113 -118	.....	.....	104 -120	111½-113½
Col. Fuel and Iron.....	12,950	30½-31½	31½-32	.....	.....	31½-33	31½-32½
Federal Steel, Common.....	310,945	48 -49½	49½-52	.....	.....	52 -55	53½-55½
Federal Steel, Prefer.....	99,755	82½-83½	83½-84½	.....	.....	84½-85½	84½-85½
Tennessee Coal and Iron.....	28,530	36½-36½	36½-38	.....	.....	36½-38	36½-37½
Cambria Iron, Phila.....	2,268	42½-42½	42½-42½	.....	.....	42½-43	42½-42½
Cambria, Scrip.....	7,300	-84	-84½	.....	.....	-85	.....
Cambria, Steel*.....	27,272	11½-12½	12½-12½	.....	.....	12½-12½	12½-12½
Penna. Common, Phila.....	.....	.....	-21½	.....	.....	.....	.....
Penna. Prefer., Phila.....	.....	.....	.....	.....	.....	.....	.....
Tin Plate Com., Chic.**.....	11,443	.....	.....	.....	.....	43½-45	40½-43½
Tin Plate Prefer., Chic.**.....	4,195	.....	.....	.....	.....	98½-100	98 -98½

* \$1.50 per share paid in.

** Does not include Thursday and Friday.

Foreign Coke Tins, IC, 14 x 20:

	New York.
Bessemer Steel, full weight (futures).....	\$4.00
Bessemer Steel, 100 lbs (futures).....	3.85
Bessemer Steel, 95 lbs (futures).....	3.75
Bessemer Steel, 90 lbs.....	3.65

The Magnolia Metal Company of 266 West street, New York, announce that while their specialty during the past 12 years has been the manufacture of Magnolia Metal, they are also in a position to supply all grades of Babbitt Metal from the best to the lowest grade.

The Iron and Industrial Stocks.

In spite of the holidays there has been a very heavy week in some of the leading steel stocks. The fluctuations in American Wire, common and preferred, have been very large, notably on Tuesday. The stock seems to have little Wall street backing, but is thought highly of by people in the business. Federal Steel has scored a heavy advance in the common, which seems to have become the favorite. Cambria Steel is holding its own, while Tin Plate has eased off lately.

Tennessee Coal, Iron & Railroad bonds have sold up lately, going above par. It is somewhat surprising that the Birmingham division bonds, usually higher than the Tennessee division, have sold up to 103, while the latter have gone to 104½. There have been no sales lately of the preferred stock, on which five years' interest is due. The chances that this back interest may be paid look better than for a very long time. Colorado Fuel & Iron 5 per cent. bonds have sold to-day at 87 to 87½. We append below closing quotations of a number of industrial stocks:

International Silver, Common.....	22 to 25
International Silver, 5s.....	99 to 100
Mich.-Peninsular Car, Common.....	21 to 23
Mich.-Peninsular Car, Preferred.....	81 to 84
Mich.-Peninsular Car, First 5s.....	99 to 100
Otis Elevator, Common.....	37 to 38
Otis Elevator, Preferred.....	84½ to 85
H. R. Worthington, Common.....	36 to 38
H. R. Worthington, Preferred.....	101 to 102
Cramp's Shipyard Stock.....	79 to 80
Pratt & Whitney, Common.....	3 to 6
Pratt & Whitney, Preferred.....	40 to 50
E. W. Bliss, Common.....	115
E. W. Bliss, Preferred.....	125
U. S. Projectile.....	90
Barney & Smith Car, Common.....	14 to 16
Barney & Smith Car, Preferred.....	65 to 70

The American Steel & Wire Company have declared a dividend of 1½ per cent. on their preferred stock.

The Rhode Island Perkins Horseshoe Company have declared a quarterly dividend of 1 per cent. on their preferred stock.

The Ohio Steel Company of Youngstown, Ohio, paid last year in dividends \$800,000, on a capital stock of \$2,500,000, of which \$1,000,000 was issued to pay for the blast furnace improvements now under way.

The La Belle Iron Works of Wheeling, W. Va., have declared a cash dividend of 50 per cent.

The Colorado Fuel & Iron Company, Pueblo, Col., report the largest earnings for November of any month in their history.

The Wire Rod Mills.

The consolidation in the wire industry is raising the question seriously with the large number of small wire drawing plants where their supplies of rods are to come from. Besides the plants now in the control of the American Company or in negotiations with that company there are the following rod mills, the capacity appended being that given by James M. Swank:

New Haven Rolling Mill Company, New Haven, Conn.,	4500 tons.
Newburgh Wire & Nail Company, Newburgh, N. Y.,	2700 tons. Idle.
Benjamin Atha & Illingworth Company, Harrison, N. J.,	5000 tons.

Trenton Iron Company, Trenton, N. J., 18,000 tons.

John A. Roebling & Sons Company, Trenton, N. J., 36,000 tons.

Cambria Steel Company, Johnstown, Pa., 27,000 tons.

Portage Iron Company, Limited, Duncansville, Pa., 30,000 tons.

Dillon-Griswold Wire Company, Sterling, Ill.

Ashland Steel Company, Incorporated, Kentucky. Building a modern rod mill.

Shoenberger Steel Company, Pittsburgh, Pa. About to build a large rod mill.

Alabama Steel & Wire Company, Birmingham, Ala. Building a large rod mill.

Nearly every one of the works enumerated convert the greater part of their rods into finished product and have relatively little for sale in the open market.

The New York Machinery Market.

Office of The Iron Age, 232-238 William street, {
New York, January 4, 1899. }

Indications in the trade are that the year just entered upon will prove a prosperous one for the machine tool business. This opinion is voiced by many of the leaders in the trade whose shops for some time past have been rather crowded with work. The month of December closed up in very satisfactory shape, and inquiry this week has been good. There are evidences of an incline in the scale of prices.

In the engine and boiler market this district has recently had added to it another firm, who are adding another line of engines to the long list. The firm referred to are Woolston & Brew, who will represent in this territory the Fisher Foundry & Machine Company of Pittsburgh, together with the Bay State Iron Works of Erie, Pa. Engines, boilers, tanks and machinery are included in their line. Their offices are in the Washington Life Building, 141 Broadway. Mr. Brew, who was formerly prominent in the Pittsburgh trade, reports having met with a good business. The firm have just sold to the American Sugar Refining Company a 26 x 24 inch automatic double valve Fisher engine, with side crank. It is to be direct connected to two 150-kilowatt General Electric dynamos, and is probably the largest engine of this type ever designed. A 200 horse-power double valve Fisher engine was also sold to the Lehigh Coal & Navigation Company of Lansford, Pa., and 600 horse-power of boilers were ordered by the Newtown Traction Company of Newtown, Pa.

The contract for the heating of two mills for the International Paper Company of Berlin, N. H., was awarded to the America Blower Company of 141 Broadway. This company were also the recipients of the contracts for the engines, boilers and coils for the drying plant for the Looschem Piano Company of Paterson, N. J., and the heating of the four nine-story buildings for the Victor Knitting Mills of Cohoes, N. Y.

It is stated that the contract for the engine forgings for the six new merchantmen which are now building at Newport News was awarded to the Midvale Steel Company, and that the Cleveland City Forge Company received the contract for the frames.

Business in automatic stoking machines was exceedingly satisfactory during the year of 1898. December closed up strong, showing more business than the last month in any year previous. The month of November is said to have been the largest on record. Inquiries which are now in the hands of the large stoker manufacturers point toward a lively opening of the new year.

The American Stoker Company of this city report a large amount of work now under way at their shops, and a demand which is better than they have ever encountered at this time of the year. The Playford Stoker Company of Cleveland report as a day's business: From the Apollo Iron & Steel Company, Pittsburgh, 24 stokers, to be attached to 24 250 horse-power Cahall vertical water tube

boilers at Vandergrift, where the company have just installed six stokers, and besides the 24 have six under way; from the Heine Safety Boiler Company of Pittsburgh, one stoker for a 200 horse-power water tube boiler for the H. J. Heintz Company of Allegheny, Pa., and from W. F. Patterson, Pittsburgh, one stoker to be fitted to a 250 horse-power Erie City boiler. The company are also installing eight stokers to 300 horse-power boilers at the works of the National Tube Works, McKeesport, three to 250 horse-power boilers for the Crystal Ice Company, and three to 250 horse-power B. & W. boilers at the lighting station at Allegheny.

The Erie Gas Engine Company, Erie, Pa., received an order from the McCoy Glass Company, Kane, Pa., for a 200 horse-power gas engine. Among other orders which the company have recently received is one for a 100 horse-power gas engine for the Grand Driller Company, New Kensington, Pa., and an order for seven 50 horse power gas engines for the natural gas district.

Charles R. Day, city clerk, New Richmond, Ohio, writes that the contracts have been awarded as follows for the water works and electric light plants: Rumsey & Co., Seneca Falls, N. Y., pumps; American Pipe & Foundry Company, Chattanooga, Tenn., pipes and special castings; R. L. Wood & Co., Philadelphia, hydrants; Bourbon Copper & Brass Works, Cincinnati, valves; Standard Boiler & Bridge Company, Bellaire, Ohio, building stock, boilers, &c., and Westinghouse Electric & Mfg. Company, electric light systems. The engine has not been contracted for as yet.

It is rumored that the Boulevard Commissioners of Jersey City are considering the question of improving the Snake Hill electric light plant.

J. H. Scarboro of Statesboro, Ga., is in the market for boilers, engines and iron and wood working machinery.

Bids for the county bridge, Lorain, Ohio, have been opened. They are: King Bridge Company, Cleveland, Ohio, \$145,000; \$145,200 and \$140,000; Variety Iron Works Company, Cleveland, Ohio, \$150,000; Youngstown Bridge Company, Youngstown, Ohio, \$154,000; Groton Bridge & Mfg. Company, Groton, N. Y., \$148,800; C. L. Strobel, Chicago, Ill., \$144,100, \$146,050; Wrought Iron Bridge Company, Canton, Ohio, \$148,000; Mt. Vernon Bridge Company, Mt. Vernon, Ohio, \$150,000; Toledo Bridge Company, Toledo, Ohio, \$150,000; J. G. Wagner & Co., Milwaukee, Wis., \$147,000; Edge Moor Bridge Works, Wilmington, Del., \$149,000; Horseheads Bridge Company, Horseheads, N. Y., \$160,000; Massillon Bridge Company, Massillon, Ohio, \$150,000; Champion Bridge Company, Wilmington, Ohio, \$155,000.

The Pencoyd Iron Works were the lowest bidders for the superstructure of fixed spans on the Summer street bridge, Boston. Their bid represented \$47,732. Other bids were: Berlin Iron Bridge Company, East Berlin, Conn., \$48,194; Wrought Iron Bridge Company, Canton, Ohio, \$48,900; New Jersey Steel & Iron Company, Trenton, N. J., \$48,941. and Pennsylvania Steel Company, Steelton, Pa., \$49,479.

Fox & Engel, 253 Broadway, New York, were the lowest bidders for the water pipe for Jersey City, N. J. Their bid per ton was \$17.75 for 6 inch, \$17.75 for 8 inch and \$17.50 per ton for 12 inch. The next lowest bidders were M. J. Drummond & Co., 192 Broadway, New York, with \$18.40 for each of the three sizes.

J. H. McConnell, superintendent of water works, Minneapolis, Minn., writes that about February 1 the Water Department will require more than 25,000 feet of 6, 8, 12 and 16 inch water pipe.

About 6000 feet of 12-inch, 6000 feet of 8 inch and 6000 feet of 6 inch pipe will be required for the water works of Binghamton, N. Y., in April. D. Felter is superintendent of water works.

Quantities of pipe, hydrants, gates, &c., are wanted by the cities of Joliet, Ill.; Malden, Mass.; Vailsburg, N. J.; Beloit, Wis.; Newport, Ky.; Goshen, Ind.; Independence, Mo., and Elgin, Ill.

We have been informed that the funds for carrying out the water works project at Johannesburg, South Africa, have not yet been received by the municipal board and consequently the work has become hung up indefinitely. Plans, proposals and bids have been sent in by various concerns in this country. A public lighting system has also been projected by this municipality, but has failed to materialize, also on account of the lack of funds.

The New York Journal of Commerce says: "The Alsace Lorraine State Railway authorities are shortly to be in the market for the supply of 1250 tons of wrought iron, 380 tons of channel iron, 1500 tons of iron castings, 680 tons of iron plates, 24 tons of crucible tool steel, 80 tons of iron rivets, 60 tons of nuts, 240 tons of nuts and bolts and 65 tons of galvanized iron wire. Those American manufacturers having agents in London will, it is said, have an excellent opportunity to make arrangements to secure some of the contract, as it is doubtful if the requisitions will reach this market unless they are sent for."

Goodrich & Goodrich, architects of Baltimore, Md.,

who are preparing plans for a large hotel to be erected at Havana, are also obtaining estimates on the various improvements that the hotel is to have, among which are said to be refrigerating, electric and pumping plants and elevator system. The enterprise is backed by American capital.

The San Juan & Rio Piedras Railroad Company have been incorporated at Albany, N. Y., with a capital of \$300,000 to construct and operate an electric or steam railroad $7\frac{1}{2}$ miles long between San Juan and Rio Piedras, Porto Rico. The directors are George H. Walbridge, William B. Parsons of New York City, Fernando G. Echeverria and others.

J. L. Osgood has severed his connection as manager with R. Hoffeld & Co. of Buffalo, N. Y., to become the representative in Buffalo of Pratt & Whitney. He has secured premises at Seneca and Wells streets, and will carry there a full line of the products of the company. Mr. Osgood will also handle other classes of goods which his customers desire. Mr. Osgood has a thorough acquaintance in his field, having been in business in Buffalo for 16 years, previous to which time he was actively at work in a number of large New England plants.

The Chicago and Northwest Machinery Market.

Office of *The Iron Age*, 805 Fisher Building, CHICAGO, December 28, 1899.

The December demand for machinery added to the good record made in previous months. Builders of large engines and mining machinery received further orders, insuring continued activity in their manufacturing departments for a considerable part of the coming year. Medium sized and small engines were also in good request, showing the excellent condition of general manufacturing interests. Business in machine tools held up remarkably well, considering the approach of the end of the year and the usual disposition of buyers to defer purchases until after the inventory period. Several good outfits were sold, and numerous inquiries have been received for others. Manufacturers of standard machine tools are getting so crowded with work that they are falling more and more behind on deliveries, causing sales agents to predict much trouble in the near future in trying to satisfy their customers. Good second-hand machinery is becoming scarce, buyers having of late been much less exacting with regard to precise sizes and taking what they can get. The supply of second-hand machinery has been steadily replenished for a long period by the equipment of bankrupt machine shops thrown on the market, but it looks as if the time is rapidly drawing near when little is to be expected from this source, thus making the demand for new tools greater than ever. A tendency to purchase better machines is noted as the necessity for stringent economy passes. The advance in the cost of iron and steel is having its effect on machinery, and prices are stiffening. Activity is also observed in all classes of mill supplies. The demand for shafting and other power transmission appliances, emery and polishing wheels, &c., has been heavy. A steady good trade in machinists' tools during the entire month is reported by the leading merchants.

A retrospect of the year shows exceedingly satisfactory progress toward better times in the machinery trade. This has been especially the case in the last seven or eight months. The opening months suffered to some extent by the absence of the bicycle demand, which had been a conspicuous feature of the machinery trade in the previous year. The activity in agricultural implement factories, car shops and railroad repair shops grew more pronounced as the year progressed, and at length, in conjunction with the improvement in general business, the shrinkage in the bicycle demand was more than overcome. The builders of heavy engines and mining machinery had a continuously good year, surpassing anything in their previous history. Manufacturers of farm machinery not only exceeded any former year, but made great gains and were obliged to add to their manufacturing facilities in the light of their busy season. Builders of machinery for flour mills, saw mills and

general wood working have had a year much above the average of several previous ones.

The Edward P. Allis Company, Milwaukee, Wis., during December received about the usual number of engine orders, the especially notable ones being two engines for the Columbia Railway, Washington, D. C., who are changing their cable road to an electric system. The North American Chemical Company of Bay City, Mich., have ordered a third 1500 horse-power engine. The North Jersey Traction Company, Newark, N. J., have ordered a 2000 horse-power direct coupled engine. They have sold the entire equipment, including power plant, of a 500-barrel flour mill to be erected in Shanghai, China. The orders booked by the company during 1898 will amount to about \$750,000 more than during the preceding year. They consider the outlook for the coming year as most encouraging.

The Kempsmith Machine Tool Company, Milwaukee, Wis., found their December business very good and fully up to their capacity. They have many unfilled orders on their books that will carry them well into the new year. Their business for the year 1898 was the best they ever had, and is 30 per cent. more in volume than 1897, which was their next best year. Their sales for the last three months were nearly all domestic, but export orders are now coming again, and unless all signs fall there is every indication of a prosperous year ahead, both in domestic and foreign business. They note that buyers at the present time do not hesitate as much as in former years in placing their orders, as they evidently realize that manufacturers as a rule are disposing of their product without much effort.

The Gates Iron Works, Chicago, usually find December a very dull month, but they have this winter found it necessary to run night and day, 120 hours per week, with a full force. This is the best evidence they can give of the condition of business. The volume of their business during 1898 was nearly 15 per cent. higher than any preceding year.

The Vilter Mfg. Company, Milwaukee, Wis., report that their business the past year in the line of refrigerating and ice making machinery and Corliss engines, has been good, and in December was exceptionally so. Among the larger contracts taken that month are the following: Robert Portner Brewing Company, Alexandria, Va., 100-ton refrigerating machine; Bechaud Brewing Company, Fond du Lac, Wis., 25-ton refrigerating machine; Snider-Hughes Company, Cleveland, Ohio, two Corliss cylinders; E. Keeler Company, for Lock Haven Silk Mills, Pa., 16 x 36 Corliss engine; Commonwealth Brewing Company, Philadelphia, Pa., 35-ton refrigerating machine; Columbia Brewing Company, New Orleans, La., two 35-ton refrigerating machines; Chas. Roesch & Sons, packers, Philadelphia, 50-ton refrigerating machine, and others. The aggregate was not so great as the business of December, 1897. Nevertheless the year 1898 has been a good one and judging from the number of inquiries, it would seem that the prospects for 1899 are very encouraging.

The Charles F. Elmes Engineering Works, Chicago, are very busy and have been for the past year, having run their plant night and day part of the time. They report prospects for the coming year very good and especially the first part, having received orders which will keep them busy for some time. Inquiries have been especially good of late, and it looks as if manufacturers generally are preparing to add machinery or build new plants in the early part of 1899.

The Webster Mfg. Company, Chicago, state that their trade during the month of December was larger than during any previous year for the corresponding month. They have quite a number of unfinished contracts on hand, besides the steady regular trade, which has kept up surprisingly well for this season of the year. They are finishing up some contracts for the Armour Elevator Company, Chicago; the Rialto Elevator Company, Milwaukee, and the Northwestern Malt & Grain Company, Chicago, besides a number of smaller contracts taken during the month. Their gas and gasoline engine business during the past year has been specially satisfactory, their output having largely increased, which was made possible by an increase in manufacturing facilities. They quite largely added to their plant in new machinery and tools. One of the machines put in is a 16-foot Niles boring mill. A 40-ton cupola was placed in their foundry. Their business during 1898 was about 30 per cent. in excess of 1897. They anticipate the coming year better prices as well as larger dividends for their class of manufacture. The peculiar feature of business for the past year, they believe, is that notwithstanding the fact that all of the large manufacturing plants have been full of work, still the margin of profit was very close. The price of raw material has increased very little and in some cases not any, while the prices obtained for the manufactured product have been no higher, but in some cases lower than they were a

year ago. As for themselves, they have determined that during the coming year they are going to get better prices for their manufactured material and will let competitors have the jobs that have no profit in them.

The Whiting Foundry Equipment Company, Harvey, Ill., report that trade in December was very good, both as regards orders received and quantity of inquiry for future business. The latter part of December and early January is usually their dull season, but they have sufficient work to keep the shops going in good condition till March. Their export business has increased nicely and they are shipping considerable material to different sections of the world. Their business of 1898 will double that of 1897, which was a decided improvement over 1896. They feel encouraged over the prospects of the business of 1899, as many improvements are talked of all over the country.

Williams, White & Co., Moline, Ill., are still quite busy, with good prospects, although not rushed quite so hard as a month or two ago. Taking a retrospect of 1898, they find that they have received about twice as many orders for their machines as in 1897. They have furnished ten of their drop hammers this fall to the Deering Harvester Works, Chicago. Their machinery is very largely used by agricultural implement people. They also furnished a complete outfit of bulldozers, punching and riveting presses to the Kewanee Mfg. Company of Jersey City last summer. Their specialty is railroad work—brake beams—and they took five bulldozers, a vertical trimming press, a vertical gang punching press and a vertical gang riveting press, besides an eye bending machine and a riveting press. During the year they have in several cases furnished special machinery for manufacturing railroad appliances. During the past week they shipped three large bulldozers abroad.

The Stover Mfg. Company, Freeport, Ill., report that their business for 1898 averaged much better than any previous year and shows an increase of about 25 per cent. over any year in their history. During the year just ended they established many important agencies throughout Europe and other foreign countries, and have thoroughly schooled them as to the uses of their goods, so that they confidently expect a large increase of business from this source the coming year. They are also better organized in home territory than ever, and with present excellent prospects look for a liberal increase in business. A very important feature noted the past year has been the small amount of credit asked for. Their business has been very largely cash, and losses were comparatively nothing, so that the business has been satisfactory in point of volume and profit.

During the year 1898 the Link-Belt Machinery Company of Chicago were very busy, necessitating the running of their plant night and day seven months and full time the balance. Representative contracts executed were for the complete power transmission machinery, link-belt elevators and conveyors installed in the new plant of the Producers' Cotton Oil Company, Yazoo City, Miss.; Hoosiac "B" Elevator, Boston, complete grain elevator machinery; Chicago-Virden Coal Company, Virden, Ill., one 100-kilowatt dynamo, engine, switchboard and eight Link-Belt chain breast mining machines; McCormick Harvesting Machine Company, Chicago, sand handling conveyors for their foundry; Tuscaloosa Wadding Company, Tuscaloosa, Ala., wadding elevator; Colorado Fuel & Iron Company, Sopris, Col., large coal conveyor, used in connection with their coal washer; Stineman Coal & Coke Company, South Fork, Pa., engine, 100-kilowatt dynamo, switchboard, and 10-ton 80 horse-power locomotive; Mandel Bros., Chicago, merchandise elevator extending eight floors; National Malleable Castings Company, Chicago, sand handling conveyors; Clearfield Coal Company, Tyler, Pa., one 150-kilowatt dynamo, two 60 horse-power locomotives, switchboard, and three low Link-Belt mining machines; Albert Schwill Malting Company, Chicago, conveyors for handling coal into storage room and thence to boilers; Chicago City Railway Company, Chicago, coal elevator; Summit Coal Company, Linton, Ind., boiler, engine, 100-kilowatt multipolar dynamo, switchboard and one Link-Belt mining machine; Cox Bros. & Co., Chicago, electric coal scrapers; Consolidated Coal Company, St. Louis, one 100-kilowatt dynamo, switchboard and one 10-ton 26-gauge locomotive; Northwestern Gas & Coke Company, Evanston, Ill., coke elevator; International Packing Company, Chicago, complete system of hog conveyors; University of Illinois, Champaign, Ill., coal and ashes handling machinery; Patton Coal Company, Patton, Pa., one 100-kilowatt dynamo, engine and 10 Link-Belt mining machines; Julius Knack, Detroit, Mich., retail coal pocket and conveyors; Morrisdale Coal Company, Morrisdale Mines, Pa., engine, 100-kilowatt dynamo, 10-ton 80 horse-power locomotive; American Glucose Sugar Refining Company, Waukegan, Ill., char filters; Chase Elevator Company, Chicago, machinery for Chicago &

Grand Trunk Railway grain elevator, Elsdon station; Wisconsin Grass Twine Company, Chicago, sand elevator; Frankfort Chair Company, Joliet, Ill., rope drive; Paterson & Busby, Memphis, Tenn., log haul.

Humphrey & Sons, founders and machinists, Joliet, Ill., say that the chief thing they note is the persistent cry of the pig iron salesmen that iron is on the road to \$15. On the other hand, their competitors are making lower prices than ever, which would lead them to think that improved methods of manufacture are being put in service, or that the activity of the foundry business is considered largely in the nature of a spurt. They know that labor is receiving "before the panic prices," and that is to them the only step taken so far toward improvement that is sure of a foothold. In the meantime they have to report that they are full of business, but at low prices.

The New Doty Mfg. Company, Janesville, Wis., say that business has been better with them during the past year than for any year since 1893, and the last part of year showed a steady improvement over the first part. The latter part of December witnessed a small dropping off in orders, but they ascribed this to the general tendency to put off orders until after the beginning of the new year. They consider the prospects for 1899 as good. They will bring out a number of new tools, having in preparation all the work for largely increasing their line of punches and shears, and will make the heaviest tools in their line.

The Woolley Foundry & Machine Works, Anderson, Ind., report their trade for December exceptionally good. They booked a number of orders, and have about all the business they can handle. The past year's business was very gratifying and exceeded previous years. They have sold a large number of drop hammers, mostly of the larger sizes, also a number of extra heavy presses, and now have a fine line of inquiries, some of them being for special heavy machines. The prospect is very bright for the coming year. The most striking feature of the past year was that they found the trade generally cheerful and full of confidence.

The Q & C Company, Chicago, Ill., believe that they can best explain the present condition of business with them by stating that while they are working 20 hours a day in their factory they are not able with their present capacity to give as prompt shipment to orders as they would like, and are obliged to refuse a considerable amount, which is a very happy condition and one quite different from that of a few years ago, when they were doing the worrying and not the customer.

The Stover Novelty Works, Freeport, Ill., report that their line of business is exceedingly good; in fact, the past month brought them more business than any other month in the year. They are now from six to eight months behind on orders for special machinery, into which business they have largely drifted, receiving orders from foreign countries as well as our own. They are now figuring on enlarging their capacity, as the present plant is far too inadequate. They thus expect to keep up closer with their orders, to the satisfaction of their trade, which is constantly increasing.

The Union Steam Pump Company, Battle Creek, Mich., say that their business has been very good the past year, being double that of the previous year, which was 50 per cent. more than the year before that. Their domestic trade is better than ever, and their foreign trade is very flattering. Very many of the goods which they send abroad are for very large work. Their pumps go into steamships, breweries, sugar refineries, ordinary boiler feeding and deep well work. From present appearances their 1899 business will increase at least 100 per cent. As regards the striking features of the business for the past year they say that ordinarily business in the last two or three months of the year is slow, but in 1898 it has seemed to increase in volume over the previous months. They do not consider that they are doing a very large business, although their output aggregates 4000 to 5000 pumps per year.

The Marshall & Huschart Machinery Company, 62 and 64 South Canal street, Chicago, enjoyed a good business in December, but the volume was not so large as in previous months, which had been swollen by good contracts for the entire equipment of important shops. Nevertheless, they had no reason to complain of the business received, and felt very much encouraged at the manner in which the year wound up. A particularly pleasant feature which they note is the promptness with which bills are now being paid, collections being remarkably easy.

The Pierson Machine Company, 39 West Randolph street, Chicago, were favored with a good business in December, which steadily increased during the month. The manufacturers of bicycles have been good customers, placing more orders for the company's automatic hub machine. A good demand was also found outside of the bicycle trade, notably for machines for cartridge

loading. The volume of business during the last half of 1898 was at the rate of twice that of 1897.

The Chicago Wheel & Mfg. Company, 39 West Randolph street, Chicago, found the demand for emery wheels improved very materially in the last few weeks of the old year. The volume of business in December was not only much better than ever known at that time of the year, but larger than they had ever known it. This condition is not peculiar to themselves, but every other emery wheel manufacturer is finding the same heavy demand.

Hill, Clarke & Co., 12 South Canal street, Chicago, say that the business of 1898 was fair but not specially large. They look, however, for a much better business this year, owing to the fine condition of all branches of trade.

Manning, Maxwell & Moore, 22 to 26 South Canal street, Chicago, found business excellent for the last half of 1898, although rather quiet for the first half. In December, notwithstanding the extra work entailed by taking over the Chicago branch of the J. A. Fay & Egan Company, which prevented them from doing any thorough canvassing of the trade, a great deal of business was booked, making the month unusually active. They never before saw the month of December develop such a good demand for machinery tools. The outlook for the coming year is exceedingly promising.

J. B. Doan & Co., 68 and 70 South Canal street, Chicago, say that their experience has been that a great deal of improvement was shown in 1898 over 1897. All the large local machine shops have added to their equipment, and more tools are still to be bought. Many inquiries are being received from mining companies, especially from the copper region. They have taken some good orders in December, including considerable equipment for large shops in cities further west, but are finding some trouble in arranging satisfactory deliveries owing to the heavy amount of work now booked by manufacturers whom they represent. The outlook for the coming year is exceedingly bright, and they are arranging to handle a large trade.

The Compress Wheel Company, 16 North Canal street, Chicago, report that although the early part of 1898 was rather quiet, the last three months were found exceptionally good. The company for some time enjoyed a large foreign business, which was mainly with English bicycle companies, but this trade in the past year has fallen to almost nothing, so that the company's business came almost entirely from domestic sources, with, however, some good business with Canada. Their trade in 1898 was distributed over many more industries than in 1897, showing that general business was in much better shape. They have had a specially good demand from agricultural implement manufacturers and the stove makers. The outlook for the future is very encouraging.

Chas. H. Besly & Co., 10 and 12 North Canal street, Chicago, report that they found the past year the best for five years, but not up to the largest in their experience. Although it was a year of great activity in manufacturing, not many new plants were started, and this made a material difference in the character of the goods purchased. The bicycle business has also shrunk very considerably, thus cutting off an important demand. Further, goods in their line were never before sold quite so cheap, which makes a decided difference in the volume of business as reckoned in values, which is the only available method of comparison. The demand for mill supplies, machinist' tools, &c., has been very good the entire year and is active now. Their factory, likewise, has been jammed full of orders the entire year. About 25 per cent. of the production of the factory has gone abroad, foreign business having had much to do in keeping the works active. Good foreign orders are now in hand. A large Brazilian order is now being pushed through the factory, which will require two months to complete.

The Steel Ball Company, 39 West Randolph street, Chicago, manufacturers of steel balls for bearings, have had a phenomenal year. They began to turn out balls as a commercial product about the middle of May, making at the rate of 300,000 a week. Inside of two weeks their orders grew so rapidly that they ran considerably behind on deliveries. They added more machines as fast as possible, building some in their own factory and ordering others from outside shops, but the more machines they built the further behind they seemed to fall on deliveries. They now have grinders with a capacity of 1,000,000 balls in 10 hours, and also have facilities for forging, hardening, tempering and polishing this quantity, but they are short on blanking machines to furnish an amply supply for the other departments. They have just devised a rough grinding machine on a new principle, which does its work with remarkable accuracy and increases the possibilities of the production of the plant very materially.

Visit to Factories of King Powder Co. and Peters Cartridge Co.

From a Special Correspondent.

CINCINNATI, January 3, 1899.

To the Editor: Hardware people in and around Cincinnati, and in fact jobbers of merchandise generally, were given an example of push and energy in the matter of advertising methods to-day by the arrival in this city of a representative detachment of traveling salesmen from the wholesale Hardware house of Hibbard, Spencer, Bartlett & Co. of Chicago. They arrived on the 7 o'clock train with the object of proceeding to the works of the King Powder Company, located at Kings Mills, 30 miles east of Cincinnati. They were met at the station by representatives of the King Powder Company and the Peters Cartridge Company, who after breakfasting them took them to the works on a special train, chartered from the Pennsylvania Railroad. Hibbard, Spencer, Bartlett & Co. had intended to make a visit a week ago, when nearly all of their 125 traveling salesmen were at the home station, but not being able at the time to complete all arrangements, they had to make the visit to-day with only 52 of their travelers. The visiting delegation was in charge of Harry W. Chester, general manager of the Sporting Goods department. The following is a list of the visiting salesmen: W. Frith, Tom Purdon, E. L. Bennett, J. A. Edmond, A. W. McOmber, A. P. Miller, O. E. Von Oven, Geo. W. Simms, C. E. Cook, F. E. Hutchins, J. L. Hill, F. W. Millett, C. R. Farrar, G. S. Winders, C. E. Shourds, E. W. Laufman, Geo. Cassidy, E. E. Kendig, W. H. Jackson, J. E. Lounsberry, L. E. Evans, R. P. Hall, E. L. Hackman, F. W. Cole, Harry J. Wixon, W. L. Dunnington, C. E. Phillips, Fred. H. Woehner, F. A. Babbitt, W. Henry, J. Guilderman, J. A. Bessaire, W. E. Larkin, C. M. Standish, G. S. McDougal, J. B. Fitzpatrick, Chas. S. Beckwith, V. E. Hamilton, W. E. Wills, E. W. Straubinger, C. C. Clement, J. H. Tieke, H. K. Thompkins, A. E. Flick, W. H. Merritt, L. E. Steinagle, E. E. Spotswood, W. F. Budd, W. Geach, J. P. Vanhorn.

The following representatives of the King Powder Company and Peters Cartridge Company constituted the Entertainment Committee. John Parker, Detroit; J. S. French, Jackson, Ohio; Frank See, Kings Mills; H. F. Lindsey, Harry King, Joe Coyle, J. H. Mackle, A. M. Beakley, F. C. Tuttle, J. H. McKibben, O. E. Peters, Cincinnati.

The special interest which the Chicago concern have in the King Works is that they handle about two-thirds of the product of the Peters Cartridge Company, and it was the desire of the management that their salesmen should know as much about the manufacture of the goods they sell as would be possible to give them by careful inspection of the methods employed at the factory. A mistaken idea is prevalent in some quarters in effect that the Peters Company is owned or controlled by the Chicago house. This is not the case, as a clause in the charter of Hibbard, Spencer, Bartlett & Co. prohibits that corporation from possessing any interest in any factory producing the goods handled by them. The relation between the two concerns is simply that of buyer and seller, and the only ties which bind the Chicago house to the Cincinnati factory are the ordinary ones of quality and convenience.

The expenses of the entire trip, excepting the entertainment programme by the Cincinnati people, were borne by the house sending the visiting delegation, and the sole object of the trip was the education of their salesmen in order that they might be better able to talk up the goods they were to sell during the coming year. Upon arrival at the works they were escorted through the different factories in turn and then taken in conveyances across the river to the Kings Mills Hotel, where they were treated to as good a dinner as could be put up in the town. The appearance of the factories was

first class throughout, and while the salesmen were intensely interested in the different processes of manufacturing, not one of them failed to notice that the multitude of male and female employees were decked out in something considerably better than ordinary working clothes in honor of their visit. After the dinner the entire party went to the shooting range and indulged in a match shoot between Messrs. McOmber, Frith, Lounsberry, Babbitt and Von Oven, representing the visitors, and Messrs. Mackle, Coyle and Parker for the factory, with a resultant score of 25 to 11 in favor of the Peters contingent. The entire party came back to Cincinnati about 5 o'clock, where they were taken to the Burnet House and entertained for supper. After passing a couple of hours in impromptu speech making and repartee, in which both business and pleasure were very largely intermingled, the visitors departed on the 8.30 train for Chicago.

A New Rubber Combination.

THE movement to organize a new combination in rubber, to be called the Rubber Goods Mfg. Company, is intended to embrace about all the branches of the trade, besides Rubber Boots and Shoes. It is expected that articles of incorporation will be filed under the laws of New Jersey not later than the middle of this month, the authorized capital to be \$46,000,000, divided equally between preferred and common stock, the former to be entitled to 7 per cent cumulative dividends. The negotiations are in charge of Charles R. Flint, who was connected in an important way with the organization of the United States Rubber Company, who now largely control the manufacture of Rubber Footwear. He is now the treasurer of that corporation, capitalized at \$50,000,000; the president of a crude rubber importing company, and the head of a general importing and exporting business with South America. It is not yet known definitely just what rubber concerns are willing to sink their identity in this new movement. The trade for the time being may be classed, 1, as the concerns which have consented to join the combination; 2, those which positively will not do so; and, 3, those which are on the fence. Any attempt to arrange the names of these companies under the proper headings would result most likely in mistakes. It may be said, however, that of the 60 or 70 companies in the field it will be attempted to bring only the larger ones together, and the latest advices are to the effect the companies doing an annual business of \$10,000,000—or about one-third of all the business done in this branch—had signed the trust prospectus.

It is contended by the rubber trade that their profits for some time past have not been commensurate with the amount of business done. Some concerns, indeed, are alleged to have been operated at a loss, due to the continued high price of raw rubber. From time to time efforts have been made, but for the most part unsuccessfully, to advance the prices of Belting, Hose, Packing and the like. In arranging to go into a combination the avowed object is to arrive at certain economies of manufacture by reason of devoting each important factory to a definite line of goods instead of each producing everything made of Rubber, as is now the case. It is not deemed wise to attempt a further increase in the price of goods, but as an offset to dear raw materials the company whom Mr. Flint is promoting will start out with the idea of controlling the crude Rubber production of the world. In case this plan should succeed, the companies on the inside will have an advantage over the outsiders with regard to prices to be paid for Rubber. In order to carry out this programme fully the United States Rubber Company, who are very large consumers, would have to co-operate with the new corporation. It would be necessary, also, to secure co-operation in certain European markets.

J. C. Burkhalter has sold out his Hardware business in Hillsboro, Texas, to Oldham, Turner & Co.

HARDWARE.

Condition of Trade.

OUR readers will be interested in the full and able reviews of the business situation which are given in the advices which follow from our special representatives and from prominent jobbing houses, who are in a position which gives them special opportunities for taking a comprehensive and balanced view of the market. Their references to the trade of the past year and the indications as to the character and extent of future business will be read with interest. The hopeful tone of these communications is very noticeable, and agreeing as these do with the opinions which are so generally prevalent, it is evident that the new year opens with exceptional promise. The conditions which conspire to make the situation so full of promise have been already alluded to in these columns and are touched upon in the following correspondence, so that it is not necessary to refer to them here. It is a matter for congratulation that the situation is so satisfactory, and it is to be hoped that nothing will occur to interrupt the steady development of a large and permanent prosperity. Such interruption might come either in the form of business of only moderate volume, or under the stimulus of unreasonable expectations and overbuying in an excited market, developing a boom with its abnormal and mischievous tendencies and effects. We trust that the trade will avoid these two extremes and have a prolonged period of active business on a reasonable basis with some, but not too great, advance in values. The trade both at home and abroad will thus be of such character as to give manufacturers a broader field and better opportunities than they have of late enjoyed, while merchants, with renewed enterprise and increased volume of business, will, if they are wise in meeting their opportunities, find the distribution of goods, whether to other merchants or to the consumers, much more profitable than during the years of depression which we are leaving behind. Assuming that the country is to become prosperous, it is the duty of individuals so to adjust themselves to the new condition as to be in a position to reap their share of the general welfare.

Many questions concerning trade methods and tendencies still press upon manufacturers and merchants. Competition, concerning the intensity and ingenuity of which so much has been learned by experience far from agreeable, still continues and will remain as a permanent factor in the market. The disturbing influences of department stores and supply houses will perplex manufacturers and merchants alike. The policy which manufacturers will adopt in determining their relations with jobbers and retailers is one which is continually under advisement. In this connection the discussion which is going on in our columns in regard to the method adopted by A. G. Spalding & Bros. will be of interest. While most of the views of our correspondents, heretofore mainly representing the retail trade, were in favor

of the new plan, those given in to-day's issue represent largely the views of the jobbers, and are naturally in decided opposition to the new departure as unwise and impracticable. Organization among the retail trade promises to progress actively during the present year and several leading associations are now making earnest preparation for approaching meetings. From these organizations many Hardwaremen have thus far held aloof, and it would be well for such to consider whether it would not be advantageous to them and helpful to the whole trade if they should unite in this movement, which, wisely and energetically conducted, promises to do so much to correct evils from which the retailer is suffering. Each merchant, too, has his own questions in regard to improved methods and renewed enterprise, which, in view of the better outlook, should be taken hold of promptly and in a more courageous way than past conditions justified.

St. Louis.

(By Telegraph.)

Although the traveling salesmen are noted in great force at headquarters, there is no marked idleness to be observed in any direction. In the face of stock taking orders are coming merrily in, and while they are not for great amounts it is evident that shelves need replenishing. Reports from travelers show promise of good business for this year, a likelihood made evident in the transactions of the past few months.

Chicago.

(By Telegraph.)

The leading feature of the Shelf Hardware trade is the heavy demand for Wire Nails and other Wire products. Buyers generally have been impelled to make purchases by the advance in steel and the upward tendency in all forms of Wire. Orders for other kinds of goods have been light on account of inventory season and also because traveling men are now at home, and consequently the trade is not being canvassed as usual. It will be some little time until their visits are resumed and business goes on in its regular shape. The year has closed very satisfactorily for the Hardware interests, and the new year is regarded with the most sanguine expectations.

Boston.

BIGELOW & DOWSE COMPANY.—The New Year comes full of bright prospects for future success and prosperity. The depression lasted longer in New England than in many other sections of the country, but indications now point strongly and surely to the fact that this section is starting to join the forward movement.

New England is the largest owner in the Copper mines of this country, and it is estimated that the value of these stocks one year ago was \$100,000,000, as compared with \$206,000,000, which is the present value.

Boston is said to be the cheapest money market in the world at this time.

The cotton manufacturers have used up their high priced cotton and are reaping the benefits which they lost in the past by marketing high cost goods at low prices.

The woolen manufacturers have suffered from the

heavy importations of low priced goods under the old tariff. These goods are fast disappearing and the time is coming when they will receive a profit from the products of their looms.

The shipment of shoes exceeds that in 1897 and leather has made a material advance.

The increased cost of steel billets and the gradual absorption of rival plants by the American Steel & Wire Company are lessening competition and preparing for advanced prices for all products of Wire.

Wire Nails are now selling at \$1.35, f.o.b. Pittsburgh, and \$1.60 from store, with the prospect of higher prices in the near future. The sales in December were heavy and still continue, with the prospect that January sales will be greater. For a series of years January purchases of Wire Nails have been profitable to the purchasers, and there is every reason to believe they will prove so this year. With a general advance in the cost of raw material it seems safe to expect advances all along the line, and with the large increase in the demand on the manufacturers it will not be safe for dealers to follow the old policy of buying from "hand to mouth," lest they have to wait for their orders to be filled. Too low prices benefit no one.

The manufacturer is entitled to a fair remuneration for his skill. The jobber should have a fair share for his work and labor in selling. The retailer will be better satisfied when he sees the value of the goods on his shelves increasing.

Too high prices are a menace to the trade, who lose confidence, reduce their purchases and bring about a reduction which in the past few years has never seemed to end.

Starting now from the bed rock, moderate advances will be in order and accepted by the trade as a move in the right direction, while anything approaching a boom in prices is to be deplored. At this season of the year it stands the merchants in hand to make a careful survey of their own affairs and to adopt improved methods and make preparations to transact their business promptly and intelligently.

To do this many have adopted the suggestions made at the late meeting of the National Hardware Association, to call their salesmen and heads of departments together and have a free discussion of the past and the future.

Such meetings bring the employers and employees closer together and very many valuable suggestions will result.

They bring about a unity of action and stimulate confidence each in the other.

That such meetings are being held at this season marks a progressive step in the right direction.

A word from New England, wishing *The Iron Age* and its proficient staff a prosperous and successful New Year, and returning thanks for its interest in the welfare of the trade it represents and its fair dealing will meet a hearty response at this time.

Baltimore.

CARLIN & FULTON.—With the advent of a new year we are somewhat disposed to assume a contemplative mood, to become retrospective and to wonder whether prophecies as to the future can be safely based on past experiences and on present conditions.

The daily press and trade journals have been filled with information concerning the year just ended, telling us that our exports have been unsurpassed in the history of this country, that the bank clearings have grown tremendously, showing a great increase in trade, that with a gold reserve increasing in the National Treasury, with the silver question indefinitely postponed if not permanently settled, with a foreign war begun and ended so triumphantly in so short a time, the condition of our people is most decidedly satisfactory and the present year has opened most auspiciously.

Now, generally speaking, all of this is true, and as a

nation we have reason to be proud and thankful and perhaps contented, but it is another question as to how far each section of country, each corporation, or firm, or each individual citizen can feel a joint proprietorship in this general prosperity.

It is not wise to be too greatly elated over a sudden reaction from depression, and there is a middle ground between optimism and pessimism.

While exports have been immense and the transportation business of the country been wonderfully benefited thereby, let us not forget that the value of the exported article has not been at all times to all parties a remunerative one. This applies particularly to the exports of cotton, the price of which affects such a great area of country and the general condition of millions engaged in its culture.

Whether the laborer or the mechanic, the farmer or the wage earner generally considers himself better off than a year ago is uncertain. We think possibly he is getting to be, but as yet we doubt his having greatly improved his condition.

We see a most rapidly growing tendency toward consolidation of moneyed interests, a concentration of organized capital, whether engaged in transportation, in mining or in manufacturing, the object of which is partly attributed to desired economies in administration or operation. This is a most serious question before us as a people.

The trust or monopoly is not an incorporated scheme for philanthropy; its efforts are not for the benefit of any one except those controlling its stock. Its economies are generally those resulting from the closing up of mills and factories, the discharge of hands and the reduction of wages, and its power is shown by its ability to regulate the prices of even the necessities of life and to control even legislation when necessary.

Its stock frequently becomes a football for the stock exchanges, and there is generally more money made and lost in speculation upon its shares than in the sales of its manufactured products.

But there is a great comfort in the thought that the genius of our people is such that no industry can be controlled forever. Capital and enterprise will eventually compete with and overthrow any combination, trust or monopoly, no matter how great or how strong.

The Spanish war has been fought and we have won, but every merchant must consider a new feature in his expense account while he reads the glorious accounts of battles fought—namely, the cost of his stamps on every check signed, on every draft, bill of exchange or note issued, on every telegram sent, on every bill of lading and its duplicates, and perhaps he can offset the charge by the benefits derived from this country's possession of the Philippine Islands.

Do not forget that we are taxed visibly and invisibly by our National, our State and our municipal governments. Are we adjusting our selling prices accordingly?

Now, let any one run through a list of manufactured articles in our business and notice how the trust or combination is absorbing and controlling the products of so many of our factories. Compare this list with a year or so ago and see the rapid increase, and we need not be surprised before another year is ended to see many additions. Watch the lines of goods in which prices have been radically cut through competition, and as verbal agreements or even written contracts seem to have no binding force in maintaining remunerative prices, the trust seems the only remedy from the manufacturer's standpoint. It is not necessary to go into particulars, but any one with common sense can look through his own stock of goods and at his own invoices and almost predict with certainty what goods will ultimately be brought under the same fostering care which has been sought by others similarly affected.

We do not wish to be considered pessimistic at the beginning of a new year, for we have a great deal to be thankful for both as a nation and as individuals, but

do not let us be too greatly elated over our success and be carried away by the enthusiasm which results from large figures and published statistics.

Philadelphia.

SUPPLEE HARDWARE COMPANY.—The condition of trade in our city for the last two weeks could not have been more fully set forth than given in the article in *The Iron Age* of December 29, page 36, under the heading "Condition of Trade."

Never in the palmiest days of the history of our city has there been so much Christmas shopping done as there was during the two weeks preceding Christmas, showing evidence of a liberality which can only be felt when good warm clothing is worn and bread has been fully supplied for the breakfast table.

The smokeless chimneys and the closed doors of mills, which in the deserted years of 1893 to 1896 caused such distress, have given place to scenes of activity and faces of happiness. Necessary idleness of either man or woman is the exception now instead of the rule, and street tramp beggars for either drink or bread are from choice and not necessity.

The general activity of all manufacturers in our State, not only in the line of Hardware but textiles and other industries, indicates they are not only busy, but heads of departments say they have orders in hands which will require from one to three months to execute. The Iron Industries of our State have, during the past six months, executed orders beyond anything before experienced, and the wave of prosperity has surely extended and has taken within its embrace a large number of manufacturers of the country.

Throughout the agricultural districts there exists quite a comfortable feeling. There have been ready markets and fair prices for all products, and as a rule the retail merchants have been able to make collections through these districts with less trouble than at any time during the last two years, consequently they are in a position to liquidate their indebtedness more promptly than heretofore.

The railroads during a portion of the year were blocked with traffic. Goods in all lines have been cheap—wonderfully cheap—and the single men or men with a family can supply themselves comfortably with all their needs at a less cost than ever before; neither have wages been reduced, although in very many instances the manufacturer or the merchant could, in justice to himself, have consistently done so.

The export trade has been prodigious. The importation of goods, fortunately for both manufacturers and our country, has been less, and it has certainly been a memorable year without parallel, and a year of greater general prosperity than has ever been known, although we do not believe that a fair proportion of the general profits have reached either the Hardware merchant or retail trader, but the ball has been started rolling. The harvests have been large, mortgages have been paid up and in many cases money placed in the savings bank.

The present system of taking inventory of stock has reduced the time until it can be accomplished in ten days shorter time than before under the old system; therefore, with the average jobber inventory has been completed. The books for the year 1898 are closed, and it remains for the general footing to show the net results. It is generally thought the showing will be more favorable than in the preceding two years. The outlook for the present year, 1899, is favorable. While salesmen are generally off the road, they have returned reports from which we form our conclusions.

The yearly dinner to the store or house employees is an event invariably looked for after stock taking, at which time the events of the year are discussed, and then comes the "flow of wit," from the small office boys to the heads of various departments.

Our predictions are that trade will show an improvement over 1898, and a higher average of prices as the

year proceeds, unless some unexpected shock should occur. The opening of the year shows very good collections.

We want to compliment the editor of *The Iron Age* on the December 29 issue. We consider it the finest number ever issued, and the valuable information contained on pages 4 to 41 is of a character which is well worthy of perusal.

We wish you and all your patrons a Happy New Year.

St. Paul.

FARWELL, OZMUN, KIRK & Co.—The year's book has closed and 1898 is numbered with the years that have gone before. It has been a year of large events and also of some great surprises. Very few men could have been led to believe last New Year's day that within a few months the United States would be at war with Spain. And afterward, when the clouds thickened and it was seen that war must come, and intelligent observers further realized the great danger of entanglements with foreign nations, as well as of a protracted conflict with Spain alone, he was a very optimistic man indeed who even hoped that the treaty of an honorable peace would be signed within the year.

Another and a very agreeable surprise to the country generally was the hearty, substantial good feeling shown by Great Britain for the Stars and Stripes, an event of much larger importance in what it portends for the future than in its effects on our conflict with Spain, though these were certainly potent.

Let us hope that many years may come and go without our land again being required to undergo the disturbance and horrors of war.

In settling the momentous questions arising from the war statesmanship will be needed of a high order, but it is cause for profound gratitude that the country has now the prospect before it of being able to devote its energies successfully to the peaceful industries of life.

In business affairs 1898 is notable in its vast increase of volume of business, especially in manufactured products. Margins of profit have not been correspondingly large, but on the whole the results are favorable and the prospects for 1899 are very gratifying.

The conditions of trade as affected by the laws of supply and demand promise well, and if there shall be no public disturbance a period of prosperity may reasonably be expected.

As to public measures vitally affecting the business interests, there seem to us to be three requirements in order to render the continuance of prosperity probable for a period of some years.

1. That the administration shall succeed in holding the confidence of the people in meeting the problems before it in Cuba and the Philippines, as well as at home, and thus be enabled to enter the campaign of 1900 with the assurance of a certain winner. If this should unfortunately not be its good fortune, then the other two requirements which follow would be in jeopardy.

2. That there shall be no serious disturbance of existing tariff laws. Intelligent men may and do differ as to the fundamental principles that should govern Congress in the enactment of a tariff law, but they certainly agree that it is suicidal folly to be making frequent and radical changes in it. The country cannot stand four years of "high tariff" and the same period of "low tariff" following each other alternately. We have had considerable of this sort of bitter experience, and while the country has endured these costly, drastic doses, the main cause of their not having been more ruinous in their effects is one that is steadily losing its power—viz., the early development of the marvelous resources of this country. Our industries are gradually if not rapidly coming to the level of the field occupied by their competitors throughout the world. Business men and men of intelligence generally are coming to see the incomprehensible folly of having such a see-sawing policy as has been followed the last 15 years.

The third requirement is that there shall be no back-

ward step from the stand that has been taken by the people on sound money. Let there be the least real doubt on this point and all the many evidences of prosperity that we now see will go out of sight, as they did in 1893 and as repeated to a large extent in 1896.

It is not the silver question alone that demands attention, but a forward movement and early action should be taken by Congress on the paper money now issued by the Government.

Just now, when it is smooth sailing, the country is lulled into a sleep of fancied security, but when squalls arise—and they are sure to come sooner or later as may be—the national treasury, as at present handicapped, will not be in any fit condition to weather the storm.

It ought not to be a very difficult task to have sufficient legislation to protect business and public interests from this real and powerful menace, and it is to be hoped earnestly that Congress will take such action in the early future.

With these conditions assured, we believe the prospects to be very bright and that the country could reasonably expect a continuous period of prosperity, such as it has seldom or never hitherto enjoyed.

Louisville.

W. B. BELKNAP & Co.—The year is going out with the best of feeling in all circles, commercial, financial and manufacturing. With the large volume of business being done, and the amount which people are ready to contract for for future guarantees of employment of men and machines, we hear very little complaint of dull times.

The year 1898 opened out indeed with good promise, advances seemed to be the order of the day, and there was buying in the early months which bordered even on speculation. This received a sudden check with the destruction of the battle ship "Maine." Preparations for structural work were suspended, timidity prevailed, and many new enterprises were killed or held in abeyance.

Meanwhile the Government came in as a considerable buyer, and railroads were employed in the transportation of troops. It was not until midsummer that we felt our success in the game of war. Then confidence began slowly to replace panic, and we have been going on with constantly accelerated motion in this direction ever since.

Two great consolidations which will affect business more or less later on are those of the Tin Plate mills and the Wire and Nails. The form of "trusts," as we used to call them, seems to have varied somewhat, but the actual result is the same—viz., the concentration of management and direction into a few hands which can readily at first dictate prices. These immense aggregations of capital paralyze us with their figures, the like of which we encounter nowhere except in astronomy when we read of fixed stars and distant solar systems. They may make business for the time being in any one line particularly profitable to the founders, of course, but with American inventiveness all the while active there will be found shorter and cheaper methods of bringing about the desired results. New factories with more modern machinery will spring up and prove thorns in the sides of the more antiquated ones, and thus check the tendency toward arbitrary control of prices and values by any oligarchy. It is a decidedly interesting game, and it remains to be seen if excessive profits can be forced into these new channels for any great length of time.

Cleveland.

THE W. BINGHAM COMPANY.—Orders for general goods are, of course, very small at the present time, dealers showing a disposition to hold off for immediate shipments until after the inventory at the first of the year. The orders for season goods for spring shipment continue very good, particularly in the Wire and Nail line, the manufacturers having recently advanced their

prices and dealers trying to get under cover. The indications point to a good spring trade, and there is a prospect of advances all along the line in prices of staples as well as of shelf goods. The demand would seem to warrant this. There is no one, whether manufacturer, dealer or consumer, but will agree that goods have been too low.

San Francisco.

MILLER, SLOSS & SCOTT.—The eventful year of 1898 is about closing, the stores are busy with the holiday trade and stock taking, travelers are in fixing up their samples and catalogues preparatory to starting out as early as possible in the new year.

The past year has been a good one for the Coast, particularly in the Hardware line, and surpasses that of its predecessor.

The holiday trade has been good, as the weather has been all that could be desired.

With the acquisition of Hawaii and the Philippines considerable activity has been shown in the export trade and an outlet found for Pacific Coast products that will in time prove a great benefit.

During December Nails, Wire and heavy staples have been in demand, and are moving quite freely at very low prices, notwithstanding that everything points to an advance in January.

Cutlery and Sporting Goods are selling well, as they generally do at this time of the year.

Portland, Oregon.

CORBETT, FAILING & ROBERTSON.—The weather certainly has been favorable for a good holiday trade this season, and here in the city our people have taken advantage of the opportunity offered. Business in general has held up well for this time of the year. Farmers still show no disposition to sell wheat owing to the low price offered. Other farm products have brought fair prices and been realized on. The outlook for our lumber interests seems brighter than for a number of years past. Logs now bring a good price, and are in demand. Timber lands also are in demand, a number of sales of large tracts having been made to Eastern people in the last few months. Railroad construction promises to be in evidence the coming year, having rested since 1892. This means much for a new country like ours, bringing thousands of acres under cultivation and finding market for their products, also disbursing large sums of outside capital locally.

Prices show no marked change. Stocks in jobbers' hands are large, as goods were ordered freely before lake and rail navigation closed. Collections are, as last reported, slow.

New Orleans.

A. BALDWIN & Co.—Business has been somewhat quiet during the holidays, but is picking up in very nice shape, and the indications point to a very good business during the next 60 days. Seasonable goods have been moving very freely, and we look for considerable improvement in the Builders' Hardware line.

Omaha.

LEE-CLARKE-ANDRESEN HARDWARE Co.—It is years since the jobbers on the Missouri River from Omaha to Kansas City have closed their ledgers to such a satisfactory basis as shown by the general results of the past year's business.

Without an exception they have enjoyed a tremendous business; payments from country dealers have been made promptly, and a reasonable profit has accrued from the general volume.

All accounts agree that the country tributary is in excellent condition, consequently the spring trade to which jobbers are now looking forward with interest ought to be, and probably will be, of a very satisfactory character for the first six months at least, and for the remainder of the year also, provided we are favored with our usual measure of bountiful crops. It is gen-

erally conceded that there are more people, more money and more new enterprises under way in this section of the country than for several years past, and with these conditions existing no good reason can be offered why the coming months should not evidence a very large and satisfactory volume of business.

Notes on Prices.

Wire Nails.—Since our last issue there has been little opportunity for a large movement of Nails, owing to the interruption of the holiday and the attention given by merchants to closing the books of the year and making preparations for 1899. The condition of the market, too, is such that manufacturers have not been desirous of orders, anticipating as they do a large and early demand at good prices. They are accordingly continuing their policy of refusing to accept orders for future delivery and limiting their contracts to goods for early shipment. The present price is \$1.35 to the jobbing trade in carload lots, f.o.b. Pittsburgh, and the mills are refusing to accept orders at this figure, except for immediate delivery, not being willing to extend the period of delivery even to the end of the month, intimating that a change in price may occur at any time. To the smaller trade a price 5 cents higher is named. Differentials continue as follows: Cleveland, $2\frac{1}{2}$ cents; Chicago, Joliet, Cincinnati and Louisville, $7\frac{1}{2}$ cents; St. Louis, $12\frac{1}{2}$ cents.

New York.—The demand for Wire Nails in the New York market has been for the most part limited to lots for completing assortments needed at once to meet special demands. The way in which the trade are inquiring for goods or purchasing them indicates a very satisfactory condition of things, and there is little doubt that some who supposed they had purchased enough to cover their needs have found it necessary to increase their orders. In view of the condition of the market, however, they find it necessary to pay a higher price than when they purchased before. There continues to be an active demand for export, and the representatives of the mills and merchants generally are anticipating a very satisfactory business in the near future. The prices current in this market are about as follows: Carload lots on dock, \$1.50; small lots from store, \$1.60.

Chicago, by Telegraph.—Manufacturers have found business coming very easily during the past week. The upward movement in prices was assisted very greatly by the stiffening in Steel, and buyers have consequently been quick to take alarm, and have been covering their requirements quite generally. Manufacturers have been able to use some little discretion in taking business, and buyers have taken the place on the anxious bench which was but a short time back occupied by the manufacturers. The absorption by the American Steel & Wire Company of a number of independent Wire concerns has also materially helped the movement among large buyers to lay in good stocks. Carload lots are now firm at \$1.50, Chicago or equal, and jobbers quote small lots from stock at \$1.55.

St. Louis, by Telegraph.—Wire Nails are being freely dealt with at even the advanced prices of to-day. The mill quotation is \$1.50 in carload lots, f.o.b. St. Louis, with jobbers' quotation at \$1.55 for single cars and \$1.60 minimum for less than carloads.

Pittsburgh.—The negotiations under way for some time in the Wire Nail trade, referred to in this report last week, have been partly concluded, and as a result a controlling interest in the Pittsburgh Wire Company has been secured by the American Steel & Wire Company. The report that this concern have also secured a controlling interest, or had made an outright purchase, of the plant of the Oliver Wire Company, has not been confirmed. The general upward tendency in prices on Iron and Steel of all kinds has been reflected in Wire Nails, and a sharp advance in prices has taken place. The general condition of the Wire Nail market is referred to by the manufacturers as being satisfactory, there being a good demand, considering the season of the year, and the tone of the market is very strong. December shipments

by the mills were the heaviest ever known in that month in any previous year. The stocks of Nails in hands of jobbers and retailers are believed to be very light, and this, in connection with the generally prosperous condition of the country, is expected to lead to a very heavy spring trade. We quote Wire Nails for immediate shipment at \$1.35 to jobbers, with the advance of 5 cents to single carload buyers. Manufacturers are pursuing the policy of quoting for immediate shipment only, and another advance in prices in the near future is not improbable. Taking effect February 1 the minimum weight of carload shipments of Wire Nails will be 30,000 pounds, instead of 24,000 pounds as heretofore.

Cut Nails.—The Cut Nail market is not in as satisfactory a condition as are Wire Nails and prices do not show similar evidence of strength. The market remains substantially where it has been, being represented by the quotation of \$1.10 to \$1.12 $\frac{1}{2}$, and there does not seem to be much difficulty in obtaining the lower figure, though some mills name a higher price. The mills, however, express confidence that there will be a good demand during the season and anticipate that better prices will prevail. Some conferences have been held with a view to putting the market in better shape, but thus far nothing definite has resulted.

New York.—Under the influence of the holiday quiet and the condition of business at the turn of the year the Cut Nail market has been sluggish, with prices substantially as at our last report. The market is represented by the quotation of \$1.25 for carload lots on dock, small lots from store being held at \$1.30 to \$1.35.

Chicago, by Telegraph.—The market for Cut Nails is naturally firmer in sympathy with the higher price for Steel and the advances made in Wire Nails, but small lots from stock are unchanged at \$1.35.

St. Louis, by Telegraph.—Cut Nails show no variation and are still quoted by jobbers at \$1.35, base, for small lots.

Pittsburgh.—The condition of the Cut Nail market is referred to by the manufacturers as showing considerable improvement. The tone of the market is much stronger and concessions in prices, except for very attractive orders, cannot be had. We quote Cut Nails at \$1.12 $\frac{1}{2}$ to \$1.15 in single carload lots, f.o.b. Pittsburgh.

Barb Wire.—The volume of business in Barb Wire has been fair considering the season, and purchasing has been encouraged by the general tone of the market in Wire products. The manufacturers are adhering to their policy of not taking contracts for future delivery at current prices, and, indeed, prefer to have their customers purchase only what they need for immediate disposal, anticipating that prices during the season will be somewhat higher than at present. The tone of the market is decidedly strong and the lower prices which have been current have been withdrawn, and the mills have advanced the quotation to \$1.80 for Four-Point Galvanized in large lots, f.o.b. Pittsburgh. This figure, we are advised, is firmly maintained, and according to the plans adopted by the manufacturers an advance of 5 cents on this price is made to single carload buyers. Differentials for other points remain as before: Cleveland, $2\frac{1}{2}$ cents; Chicago, Joliet, Cincinnati and Louisville, $7\frac{1}{2}$ cents; Louisville, $12\frac{1}{2}$ cents.

New York.—While the volume of business is not heavy in this market at the present time a very hopeful view is entertained of future business, and current prices are firmly maintained. Local quotations on Four-Point Galvanized are as follows: Carload lots on dock, \$1.90 to \$1.95; small lots from store, \$1.95 to \$2.

Chicago, by Telegraph.—The demand for Barb Wire and Plain Wire has been greatly stimulated by the higher price of raw material and the concentration of manufacturing interests, and a heavy business has therefore been placed during the week. Prices have advanced and carload lots of Plain Wire are now quoted at \$1.35, Chicago or equal, Painted Barb Wire at \$1.60, Ellwood Wire at \$1.65, while the spread on Galvanized has been advanced 5 cents per 100 pounds all around.

St. Louis, by Telegraph.—Barb Wire shows a marked increase in price, as mills quote Painted at \$1.60, f.o.b. St. Louis, in carload lots, jobbers' quotations being \$1.65 for single cars and \$1.70 minimum for less than carloads. Galvanized can be had at an increase of 35 cents per 100.

Pittsburgh.—A sharp advance in price of Barb Wire has been made and we now quote Four-Point Galvanized at \$1.80, f.o.b. Pittsburgh, to jobbers, with the usual advance of 5 cents to carload buyers. The advance in price has had the effect of causing buyers to hold off placing orders, but the manufacturers refer to the exceedingly strong tone of the market and intimate that still higher prices before long are likely. In this connection we note that taking effect February 1 the minimum weight of carload shipments will be increased from 24,000 to 30,000 pounds.

Smooth Wire.—The market for Smooth Wire has advanced about 5 cents since our last report, being represented by the quotation of \$1.20 for carload lots, f.o.b. Pittsburgh. Manufacturers are very firm in maintaining this price and are not willing to accept orders at this figure except for immediate delivery. Differentials for other points continue as before.

Pittsburgh.—There has been a further advance in the price of Smooth Wire, and we now quote at \$1.20, base, f.o.b. cars Pittsburgh, card of extras to apply as adopted October 25. The demand for Annealed Wires is quiet, but the tone of the market is strong.

Lawn Sprinkler.—The Fan Lawn Sprinkler described in our last issue and put on the market by Fan Lawn Sprinkler Company, W. H. Stanley, selling agent, 109 California street, San Francisco, is sold to the trade at \$30 per gross.

Shot.—An advance of 5 cents in the price of Shot is announced by the manufacturers under date of December 28. The following are the present quotations, net cash 30 days or 2 per cent. discount for cash in 10 days, the usual abatement being made in ton lots:

Drop Shot, sizes smaller than B, per 25-pound bag.....	\$1.25
" " B and larger sizes, per 25-pound bag.....	1.50
Buck Shot, per 25-pound bag.....	1.50
Chilled Shot, per 25-pound bag.....	1.53
Dust Shot, per 25-pound bag.....	2.00

Glass.—The American Glass Company have announced rebates to buyers, but have made no change in existing discounts. The inducement for early purchases takes the form of a rebate of 25 per cent. off for double strength, and 15 per cent. off for single strength Glass, to all buyers of 5000 boxes or over. These inducements are made in the hope of unloading some of the stocks which are piling up in the warehouses of the combine at an alarming rate. It is stated by a paper devoted to Glass interests that some of the combined Window Glass firms have not shipped a box of Glass since they started to operate nearly six weeks ago, and that a majority of the concerns have shipped very little Glass. Under these conditions the question presents itself, Can the combination of Window Glass companies survive another season? The following are the prices of manufacturers, with rebates of 25 per cent. on double strength in lots of 5000 boxes and of 15 per cent. on single strength in same quantity:

Districts.	A.	B.	C.	D.	E.
5000 boxes or more.....	85 & 10 & 5	85 & 10 & 5	85 & 10 & 5	85 & 10	85
Carloads.....	85 & 5	85 & 5	85 & 5 & 2½	85	85
3000 boxes or more.....	85 & 10	85 & 10	85 & 10 & 2½	85 & 5 & 2½	85
1000 boxes or more.....	85 & 10 & 2½	85 & 10 & 2½	85 & 10 & 2½	85 & 10 & 2½	85 & 10 & 2½

These prices are subject to freight allowance.

Paints and Colors.—*White Lead.*—The demand for Lead products during the last week of the year has been larger than usual for the same period. The strong position of Lead and the advancing Oil market may have stimulated purchases, though no intimation has been given by manufacturers of an advance in the price of White Lead. An exceptionally large spring business is expected, especially in the West. Quotations continue as follows: White Lead in Oil in lots of less than 500 pounds, 6 cents per pound; in lots of 500 pounds and over, 5¼ to 5½ cents

per pound. Dry Lead is quoted at 5 cents per pound in barrels.

Red Lead, &c.—The demand for Red Lead is fair at unchanged prices of 5¼ cents in barrels and half barrels and 5½ cents in kegs. The Glass and Rubber manufacturers are making use of a large quantity of Litharge and contract deliveries are being promptly taken. The price is the same as that for Red Lead. Domestic Orange Mineral is selling in a moderate way at former quotations of 7¼ to 8¼ cents per pound.

Zincs.—Both domestic and export demand for American Oxide has kept up remarkably well to the present time and has been in excess of former years. The indications are that 1899 will see a still larger demand. Prices remain unchanged on the basis of 3¼ to 4¼ cents for Dry.

Oils.—*Linseed Oil.*—The price of Raw Linseed Oil was advanced by city crushers on December 29 to 41 cents in lots of five barrels or more and 42 cents in lots of less than five barrels, with the usual advance of 2 cents per gallon for Boiled. Out of town brands are held at 41 cents for Raw. The advance does not bring the price of Oil on a parity with Seed. Large buyers appear to be temporarily out of the market and only those whose requirements are imperative are purchasing. The American Linseed Oil Company are expected to begin active operations about February 1. Whether they have any quantity of Seed or Oil on hand is an unsolved problem, so that the effect of their advent in the market is problematical. It is thought by those in the trade that oil will be higher in price before a reaction sets in.

Spirits Turpentine.—During holiday week the Turpentine market was not active, and a comparatively small quantity changed hands. Stocks at this point are quite large, but holders are offering sparingly in absence of demand, anticipating higher prices, which are justified by Savannah quotations. The market is quiet but firm at 45½ cents for Southern and 46 cents for machine made barrels.

Minnesota Retail Hardware Association.

THE next annual meeting of the Minnesota Retail Hardware Association will be held in St. Paul on February 8 and 9. At the sessions on the first day reports of officers will be read and also some papers by the members. Election of officers for the ensuing year will also take place. On the following day some valuable papers are expected from jobbers and manufacturers. The association is assured of reduced railroad and hotel rates. Invitations will be sent to other State associations to send delegates, and it is hoped that the meeting will be the most interesting and important yet held. The Minnesota association now numbers 397 members, and the Executive Committee, reviewing the work done since June 1 last, is gratified with the results shown. President Ladner will shortly appoint a committee of three to meet similar committees from the North Dakota and Wisconsin associations in St. Paul on February 7 for the purpose of considering matters pertaining to the Northwestern Association, which comprises the Hardware organizations in these three States.

Mead & Smith.

A COPARTNERSHIP has been formed by O. C. Mead and W. P. Smith under the name of Mead & Smith, who will continue to represent the interests of various manufacturers throughout the Southern States as heretofore. Both of these gentlemen are well and favorably known to the trade, Mr. Mead as the representative of a number of manufacturers, and Mr. Smith as connected with J. C. McCarty & Co., and formerly secretary of the Southern Hardware Jobbers' Association. The new firm will have the best wishes of a host of friends.

Under the exceptional pressure on our columns we are obliged to omit from this issue the usual article in The Knight of the Grip series.

Nails and Wire in 1898

The market for Wire and Cut Nails during the past year has been on the whole a fairly steady one, the fluctuations not being as large or violent as in some former years. Prices have closed a shade lower than at the opening of the year. The tone of the market is, on the other hand, decidedly better and the condition of these lines is eminently satisfactory. We give below a synopsis of the course of prices during the year, the figures given being for carload lots, f.o.b. Pittsburgh. From this it will be seen that the range of prices during the 12 months was as follows:

	Highest.	Lowest.
Wire Nails.....	\$1.50	\$1.25
Cut Nails.....	1.15	1.05
Barb Wire.....	1.80	1.65
Smooth Wire.....	1.20	1.10

The year just closed witnessed some remarkable events in the Wire trade which had a direct influence on the demand for Wire Nails and the prices obtained for them. These will appear from the following review of the course of the Nail trade during 1898.

The year opened with negotiations pending for the control by one consolidated company of all the Wire Rod and Wire drawing plants in the country. The prospect of this consolidation being accomplished was so bright that a charter was secured for a company to be capitalized at \$87,000,000, whose headquarters would be in Chicago. This stiffened the price of Rods and Wire and caused buyers to make heavy purchases in the closing month of 1897 and in January, 1898. All buyers tried to secure long deliveries on contracts, so that they might be well stocked in case the consolidation was effected, and prices were materially advanced. An active condition of business, therefore, prevailed throughout the whole of January. The manufacturers of Wire Nails met at Pittsburgh on the 31st and agreed to firmly maintain prices and at the same time to correct irregularities which had arisen in some of the leading markets. They decided also upon an advance of 5 cents for March. A continued heavy trade was experienced in February, but jobbers were so well stocked that they did not advance their prices to the full quotations made by the manufacturers. The jobbers further in the Northwest, however, changed their policy of quoting low prices and made their rates to correspond with those ruling at the factories. As the month advanced the demand grew lighter on manufacturers, but the advent of spring business brought a heavy demand on jobbers' stocks, and they were impelled to advance their prices to the full rates named by manufacturers. The active trade enjoyed by jobbers continued during March. The consumption of Wire Nails and other Wire products at this time was exceedingly heavy, and the demand for Wire Rods was so much in excess of the production that the stoppage of a Nail factory was occasionally necessary on this account. About the middle of the month of March it became apparent that the proposed consolidation would not be effected and the market weakened. Manufacturers found new business lighter and jobbers also made concessions to their customers. The American Steel & Wire Company, with a capital stock of \$24,000,000, were organized, taking in the majority of the large manufacturers, but not including all, and also abandoning the attempt to include all Rod mills. The change thus made in the attempt to control the Wire trade differed so materially from that projected at the beginning that everybody waited to see what the result would be. The first quarter of the year thus ended with the Nail trade in a condition of uncertainty.

April opened with buyers expecting sharp competition among the manufacturers with lower prices. They were not disappointed, as the price soon receded, although the American Steel & Wire Company were believed not to be the aggressors. They announced that

their policy would be to protect the jobbing interests and that they would aim to market their production without proceeding directly to the retail trade. The demand improved during the month, but prices receded a little further. A meeting of the large manufacturers was held at Pittsburgh early in May and an agreement was made to hold prices at a fixed rate, but the trade waited to see if the agreement would be maintained. A better demand sprung up within the next fortnight, but it was considerably lighter than should have been experienced at that season. Jobbers in large cities found their trade remarkably small and attributed its light volume to small local Nail factories selling to retail merchants in their vicinity. This was believed to account to some extent for the unusually heavy demand for Plain Wire. The demand for Nails improved in June, steadily growing with the progress of the month, but not coming up to the expectations of either manufacturers or jobbers. Large stocks of Nails in manufacturers' warehouses were, of course, not conducive to strength. Prices late in the month receded a little lower.

Profound midsummer dullness characterized the trade in July. Only a few scattered orders were received by manufacturers, practically the only trade being in the hands of jobbers, who quoted lower prices than those usually named by manufacturers. Some of the largest Nail factories owned by the American Steel & Wire Company stopped at this time, pending an adjustment of wages, and continued closed until October. The stoppage of these factories had some impression on the Nail trade in August, and as the supply diminished the demand also improved. About the middle of August the large manufacturers withdrew prices and the market developed a very strong tone. Steel Billets and Rods advanced in September and Wire Nails were in heavy demand at advancing prices. A meeting of the manufacturers was held at Chicago September 15 and they formed an association to fix prices. The jobbers, however, did not advance their rates immediately to correspond with those of the manufacturers. In October it was observed that independent Nail companies were creating some irregularity in the market. Good business, nevertheless, continued during the month. A meeting of the manufacturers was held at Pittsburgh October 25 and surprised the trade by reducing the price of Nails, the reason given being the starting up of factories which had long been idle, and the increased supply thus brought about, which would make it difficult to maintain the old rate. The demand was strong in November, but prices were irregular and toward the close of the month a quiet condition prevailed in the trade, although manufacturers were in receipt of inquiries for spring delivery. Hardly had December opened when the stiffness in the Steel market caused manufacturers to grow firmer in their views, and after taking some business at quite low rates they advanced their prices, and with every advance took more and more business. The market grew steadily stronger throughout the month, bringing prices back to the level prevailing during the summer months. The outlook for the year now pending is exceedingly promising, and manufacturers expect better returns than those with which they were favored in '98. The American Steel & Wire Company absorbed the Cincinnati Barbed Wire Fence Company and the Pittsburgh Wire Company in December and thus removed from competition with them important producers of Wire Nails. They are also negotiating with other Wire concerns, and additional important developments are expected at an early date.

The extent to which foreign markets have opened to products in these lines is also another notable feature of the business of the last year.

As giving a more detailed view of the course of the market the following table is given of our quotations throughout the year, the prices named being for large lots, f.o.b. Pittsburgh, the accompanying dates indicating

the issue of *The Iron Age* from which the reports were taken:

Prices for Carload Lots, F.O.B. Pittsburgh.

		Wire Nails.	Cut Nails.	Barb Wire, Galvanized.	Smooth Wire, Plain.
1898.					
January	6	\$1.45	\$1.10	\$1.75	\$1.20
	13	1.45	1.10	1.75	1.20
	20	1.45	1.10	1.75	1.20
	27	1.40	1.10	1.75	1.20
February	3	1.45	1.12½	1.75	1.20
	10	1.45	1.10	1.75	1.20
	17	1.45	1.10	1.75	1.20
	24	1.45	1.10	1.75	1.20
March	3	1.50	1.10	1.80	1.25
	10	1.45	1.10	1.75	1.20
	17	1.40	1.10	1.70	1.15
	24	1.40	1.10	1.70	1.15
	31	1.25	1.10	1.65	1.15
April	7	1.30	1.10	1.65	1.15
	14	1.30	1.10	1.65	1.10
	21	1.30	1.10	1.65	1.10
	28	1.30	1.10	1.65	1.15
May	5	1.30	1.07½	1.65	1.15
	12	1.30	1.07½	1.65	1.15
	19	1.30	1.07½	1.65	1.15
	26	1.30	1.07½	1.70	1.15
June	2	1.30	1.07½	1.70	1.15
	9	1.30	1.07½	1.70	1.15
	16	1.30	1.07½	1.70	1.15
	23	1.30	1.05	1.70	1.15
	30	1.30	1.05	1.70	1.15
July	7	1.30	1.05	1.70	1.15
	14	1.30	1.05	1.70	1.15
	21	1.25	1.05	1.65	1.10
	28	1.25	1.05	1.65	1.10
August	4	1.25	1.05	1.65	1.10
	11	1.30	1.05	1.65	1.10
	18	1.30	1.07½	1.65	1.10
	25	1.30	1.05	1.65	1.10
September	1	1.30	1.05	1.65	1.10
	8	1.30	1.05	1.65	1.10
	15	1.30	1.05	1.65	1.10
	22	1.35	1.10	1.70	1.15
	29	1.35	1.10	1.70	1.15
October	6	1.35	1.10	1.70	1.15
	13	1.35	1.10	1.70	1.15
	20	1.35	1.10	1.70	1.15
	27	1.30	1.10	1.75	1.15
November	3	1.30	1.10	1.75	1.15
	10	1.30	1.10	1.70	1.15
	17	1.30	1.07½	1.65	1.10
	24	1.25	1.07½	1.65	1.10
December	1	1.25	1.07½	1.65	1.10
	8	1.25	1.07½	1.65	1.10
	15	1.30	1.10	1.65	1.10
	22	1.30	1.10	1.65	1.15
	29	1.35	1.10	1.70	1.15

The Chicago Wire Nail Market.

The course of prices of carload lots at Chicago during 1898 and for several years preceding is shown in the following table, the monthly price being averaged from weekly quotations in our market reports:

Months.	1898.	1897.	1896.	1895.	1894.	1893.
January	\$1.55	\$1.50	\$2.42	\$0.85	\$1.17½	\$1.57½
February	1.57	1.45	2.42	0.85	1.20	1.55
March	1.55	1.50	2.57	1.00	1.15	1.65
April	1.47	1.45	2.55	0.95	1.10	1.65
May	1.45	1.42½	2.70	1.10	1.07½	1.60
June	1.43	1.42½	2.70	1.50	1.20	1.50
July	1.36	1.35	2.70	1.95	1.20	1.47½
August	1.36	1.37½	2.70	2.20	1.15	1.47½
September	1.45	1.50	2.70	2.40	1.10	1.47½
October	1.47½	1.52½	2.70	2.40	1.05	1.40
November	1.40	1.50	2.70	2.42½	1.05	1.30
December	1.37½	1.50	1.60	2.42½	1.00	1.27½
Average for year	\$1.45	\$1.46	\$2.54	\$1.00	1¼	\$1.50

THE CHICAGO CUT NAIL MARKET.

Not much can be said concerning the course of the Cut Nail trade of Chicago during the year. Prices were only quoted for small lots from jobbers' stocks, as carload sales were only occasionally made. Prices on such small lots were \$1.45 in January and February, \$1.47½ in March, \$1.37½ in April and \$1.35 for the remainder of the year. They averaged about 10 cents a keg below the price ruling in 1897.

THE CHICAGO BARB WIRE TRADE IN 1898.

Trade in Wire Fencing of all kinds was of a more uniform character than the Wire Nail trade. Fluctuations in the price of Barb Wire were not so great as in Wire Nails, while the demand was considerably more constant. The conditions covering the Wire market have been outlined in the review of the Wire Nail trade and will not be repeated in this connection. The year opened with almost no stocks of Barb Wire in manufacturers' warehouses, owing to the heavy demand in December. Quotations were being made for immediate shipment only. A heavy demand was also noted in January for Woven Wire Fencing and Plain Wire.

Jobbers showed their want of confidence in the attempt to control the Rod and Wire production of the country by keeping their quotations below those of manufacturers. They did this until the middle of February, when the continued demand showed its effect on their stocks and contracts, and they advanced their prices to the level of the manufacturers. In March, however, the failure of the attempt at a complete consolidation caused another decline in jobbers' prices, notwithstanding the excellent trade which they enjoyed.

April witnessed a much better trade in Wire Fencing than in Wire Nails. The demand was particularly heavy for Plain Wire and difficulty was experienced by jobbers in keeping their customers supplied. The heavy demand continued in May, with trade in Plain Wire the heaviest ever known. Some irregularities in the price of Barb Wire were reported along the Missouri River, but they were ascribed to cut freight rates. Jobbers fell far behind in making deliveries to customers on Plain Wire in June. They also had an unusually large business in Barb Wire, with, however, some falling off in demand toward the end of the month.

July is usually a dull month in the Barb Wire trade, but July, 1898, was an exception, as the demand for Wire Fencing and Plain Wire continued good enough to justify the mills in running and kept down stocks. An improvement was seen early in August and trade increased during the month, growing heavier in the latter part of the month and during September. October also witnessed a heavy trade in all kinds of Fencing and Plain Wire; the demand was greater than usual in October. On the 25th of this month the high price of Spelter caused Wire manufacturers to make a spread between Plain or Painted Wire and Galvanized of 35 cents per 100 pounds, but this spread was not maintained long. In November the active demand continued and the American Steel & Wire Company absorbed the McMullen Fence Company, large manufacturers of Poultry Netting and Woven Wire Fencing. The demand for Wire tapered off toward the close of November. The dullness continued until during December, when numerous orders were entered for spring delivery. The latter part of the month was characterized by heavy business at advanced prices.

The course of prices of Galvanized Barb Wire, in carload lots, Chicago delivery or equal, has been as follows in the past five years, our weekly quotations being averaged:

Months.	1898.	1897.	1896.	1895.	1894.	1893.
January	\$1.90	\$1.90	\$2.02½	\$1.90	\$2.25	\$2.65
February	1.90	1.85	1.97½	1.90	2.25	2.60
March	1.90	1.90	1.95	1.95	2.30	2.60
April	1.87½	1.80	2.05	1.90	2.20	2.60
May	1.80	1.80	2.15	1.95	2.15	2.60
June	1.80	1.75	2.00	2.10	2.20	2.55
July	1.80	1.75	2.00	2.15	2.25	2.52½
August	1.80	1.65	1.90	2.55	2.25	2.50
September	1.80	1.80	1.85	2.85	2.20	2.45
October	1.82½	1.80	1.85	2.85	2.15	2.40
November	1.82½	1.80	1.85	2.85	2.00	2.40
December	1.82½	1.80	1.95	2.00	1.90	2.35
Average for year.	\$1.85	\$1.80	\$1.96	\$2.25	\$2.18	\$2.55

On the 5th ult. D. J. Batchelder purchased from the Warner Lock Company, Clinton, Iowa, their entire plant for the manufacture of Steel Locks and other Hardware, with all their machinery, fixtures, tools, trade-marks, patents, &c. Mr. Batchelder has since put the plant in first-class condition and re-engaged the skilled workmen formerly employed, and the business will be continued by him under the trade name of the United States Steel Lock Company. Mr. Batchelder advises us that he has purchased and paid for in full all the trade-marks and patents he is using, and will guarantee to protect any and all persons against action or prosecution for violation of trade mark or patent rights in selling goods purchased from his company. The company are now making the tools and will have ready in ample time for the spring trade a sliding Door Lock and Sash Lift and Cup Escutcheons to match their plain and ornamental design. These will equal, if not surpass, any of their old product and will enable their clients to complete the trim of a dwelling. Alexander Cramond, formerly with the Yale & Towne Mfg. Company, is manager of the new company. Felix D. Berthet will represent the company in the East, as he did in the case of the Warner Lock Company.

The Spalding One-Trade-Price Policy.

The announcement by A. G. Spalding & Bros. that they have determined upon a radical change in their system of marketing their goods and will make but one trade price to retailers or jobbers without regard to size of purchase or position in the trade, continues to call out many expressions of opinion. In former issues we have given a number of letters from retail Hardware merchants, who generally view this new policy with decided approval as tending substantially to advance the interests of the retail trade. Other letters of opposite tenor are given below. The jobbing trade are naturally hostile to the movement as antagonistic to their interests, and many of them express themselves as doubtful of the wisdom of the change or the practicability of the new plan, some of them evincing decided opposition. As our desire is to have the question thoroughly discussed in our columns we take pleasure in laying before our readers several communications which refer to the matter as seen from the jobber's point of view. As a subject of general interest and perhaps involving principles applicable to other lines we invite a continued discussion of it, and communications from manufacturers, jobbers and retailers.

OBJECTIONS FROM THE JOBBER'S STANDPOINT.

To the Editor: A. G. Spalding & Bros.' policy looks like a move of more than doubtful expedience, and in those arguments in its favor based upon true premises which have appeared in your columns I can find nothing conclusive. Here are some objections to it which might be urged:

The Wholesaler Not Defunct.

First, it is impossible to eliminate the wholesale merchant's expense, and instead of doing away with the jobber Spalding & Bros. have simply added a jobbing department to handle this one line. They must carry the stocks from which to sell the retailers; must canvass the retail trade for orders; must decide upon credits over a territory so great that it will be impossible to have other than the imperfect knowledge gained from contradictory commercial agency reports, and must stand the cost and loss involved in handling a multiplicity of small accounts with dealers of limited capital. They cannot expect to do the business on a single line as cheaply and safely as a wholesale merchant with his accurate knowledge of the standing of dealers in a limited area, and his closer relations with them born of personal acquaintance and large dealings in many lines. Spalding & Bros. say that they do away with the intermediate jobber's profits and are thus enabled to give a uniform price to dealers, but the 10 to 15 per cent. formerly given the jobber will be more than eaten up by the increased expense, and Spalding & Bros. must do with a smaller profit or the retailer pay a higher price.

A Hint of Tobogganing in Sales, and Why.

Second, the volume of sales will be greatly decreased, both to the manufacturer and to his customers. A recent tabulation of the charges upon a jobber's sales journal showed an average of about \$3.20 of goods from each factory represented in the various orders with lesser amounts largely predominating, a few large items raising the average considerably. A dealer who can order a few goods to sort up broken lines and have them included in a shipment of sufficient size to get the proper freight classification will often purchase when he will not if he has to swell his order with goods he really does not need in order to make up the 300 pounds required to get the proper rating or pay express charges for first-class freight upon the goods. Therefore, while orders will be larger, they will be fewer and aggregate less in quantity; popular lines will be broken in retailers' stocks and customers turned away, or other goods supplied. It will not be an improvement to make it unprofitable to buy in small lots.

The Donnybrook Fun They Have Invited.

Third, Spalding & Bros. say they shall insist upon a uniform selling price on their goods to consumers and will refuse to sell any dealer who persists in cutting prices. They will have more excitement than pleasure

in enforcing such a rule if the experience of others furnishes any criterion. A rule of this kind offers an incentive to complaint and places a premium upon falsehood. Irresponsible consumers who lie to get a lower price will furnish jealous competing houses with ground for demanding that "the other fellow" be cut off the list, and wordy wars will be the natural result. There is always a difficulty in

deciding as to the justice of such claims, unless the offender publicly advertises cut prices, and many times complainants are left to wall unsatisfied or presumably honest dealers are injured.

Competition Needs No Incentive.

Fourth, Spalding & Bros.' course tends to foster competition. The dealers who are compelled to sell the goods at a fixed price will have something else "just as good" to furnish for less to the large number of people who want it, or to use in attracting trade from rival houses. Goods will be handled which can be bought through regular channels and sold at prices under Spaldings' with a profit. There will be an immediate demand by the jobbers in Sporting Goods for a line that they can handle, and it is rare for any demand to go long unsatisfied.

A Tug of War on a Reputation.

The Spaldings say that it is their reputation that enables them to adopt this policy, but no reputation will permanently stand the strain of restrictions in handling the goods in the face of fierce competition, such as such a course must engender.

How Johnny-on-the-Spot Will Rip Cogs Out of Spaldings' Gearing.

Fifth, as trade is now conducted, manufacturers cannot hope to secure direct the representation the jobbers can give them. "Johnny-on-the-spot" is doing the business in these days, and no amount of advertising and distribution of catalogues and price-lists will take his place. Claims that the jobber's day is done can only be made by persons ignorant of the real facts. There are 200 Hardware jobbers in the country, and allowing them ten salesmen apiece (doubtless away below the real fact) gives a total of 2000 men working for retail trade, a major portion of them handling Sporting Goods with other lines. Cheaper freights and better transportation facilities are constantly extending the jobber's field, until New York and Philadelphia sells goods in Illinois; Cleveland covers from Albany to Fargo, St. Louis and Chicago from Pennsylvania to the Klondike, and all stretch away to the South, with jobbers in smaller markets covering more limited areas.

What the Jobber Is Doing.

Every jobber of repute is adding to his force at this season and taking in new territory without dropping a town of the old. There is no other known agency that covers the territory so completely, so regularly and so cheaply, and by dint of filling a want of the retail trade that nothing else can supply stands so close to retailers. The actual selling expense that Spalding & Bros. must incur in their present method would be ample to cover the jobber's cost of selling and a profit that he would consider "fair," and Spalding & Bros. could still control the sales to department stores if they desired.

Two Horns of a Dilemma Predicted.

As to the advantages that Spalding & Bros. claim, they say "All intermediate profits done away with."

What gain is there if the increased expense eats up any saving and the retailer pays as much or more for the goods unless the manufacturer reduces his margin? They say, "One and the same price throughout the United States—no overcharging or price cutting permitted." It is the age of competition, and if it is not Spalding against Spalding it will be the field against Spalding, with Spalding in a harness.

A Nut to Crack.

"Maintenance of standard quality assured," Do Spalding & Bros. mean that they cannot, with the prestige of their reputation to help them, maintain the quality and sell the goods as marketed in the ordinary manner? Then they must expect to increase their profit by the change, and they cannot do so appreciably without raising the price to the retailer—*ergo*, their consumers' price must be raised to give the dealer his profit—and the raising of prices will dispose consuming buyers to look favorably upon other lines and at the same time furnish other makers with a profitable field.

FROM A PROMINENT TEXAS JOBBING HOUSE.

To the Editor: While we have not been specially called upon for an opinion in regard to the Spalding policy as outlined in a recent issue of *The Iron Age*, yet we cannot refrain from saying that we are at a loss to know how either the retailer or the Spaldings are to be benefited. We venture the assertion that the goods

Will Cost the Retailer More Money

under their new plans than under the old plan of securing them through the jobber. In the first place, he will have to buy in much larger quantities than formerly, and always sufficient to make up a shipment of 100 pounds, which on this class of goods will necessitate overbuying, as 100 pounds of Baseballs, &c., for the average retailer is a considerable quantity; in fact, so much so that he will prefer being out to overstocking himself.

Increased Cost of Marketing Goods.

The result to the manufacturer is apparent; and again, they can by no conceivable way place their goods in the hands of the retail trade without an expense for making these sales that will be greater than the profits enjoyed by the jobber. And again, there are little towns, villages, &c., which they cannot reach without an expense equal to the entire sales which would be made, and yet these places in the aggregate use no inconsiderable quantity of their goods.

About the Smaller Trade.

The consequence will be that the smaller towns, and the larger ones, too, in fact (for reasons stated in the first part of this letter), will afford a greater and better market for the jobber than before.

The manufacturer who sticks to the jobber will be very greatly benefited by this change. Our conclusion is that the establishment of a uniform price for the retail trade will not be sufficient inducement to bring the necessary increase in the larger towns to make up the decrease in the small ones.

They may contend that they do not want the small trade, but they will find that they will need it.

"A BURNING QUESTION."

Under the above title we have received the following communication from a gentleman especially qualified to discuss the subject in hand. It represents clearly and forcibly some of the objections which may be made to the plan adopted by the Messrs. Spalding, especially as related to the position and interests of the jobbers. It deserves careful perusal:

The ever burning question of whether the best interests of the manufacturer lie in distributing his goods through the medium of the jobber or in going direct to

the retailer has of late received added interest because of the radical and very public action taken by a large manufacturer of Sporting Goods.

The aforesaid manufacturer announces, through the medium of a small printed book, his intention of abandoning the jobber entirely, and of marketing in future his wares direct to the retailer. This action is all the more interesting because it is in distinct opposition to the unmistakable general drift in the manufacturing trade. It is not a new proposition, nor is it an untried one, having been essayed over and over again, with the result that it was unsatisfactory, that it was uneconomical and that it did not pay.

Why Change?

It is not unfair to assign the cause for this departure principally to the fact that the manufacturer in question very naturally believes that he will in this manner procure a better profit for himself, since all men in business are principally influenced in the long run by the motive of self interest. However much we may decry this fact by telling of the philanthropic interest which we have in the consumer, the simple fact remains that we are, all of us, in business for profit, and that the sole question to be determined is what is the best, the most honorable and the most long headed way to secure this profit.

Economic Versus Expensive Distribution.

The all important problem with every manufacturer is the matter of distribution, since the question of manufacturing successfully has been relegated to a comparatively second place in importance. The jobber exists solely because he has up to the present been found to be an absolutely necessary economic element in the solution of this problem. There is no other cause for his being. He does not live upon sufferance nor upon charity, but—and especially if he is a large jobber—solely because he has the methods of distribution so well worked out and so thoroughly at his command that no manufacturer can ever hope to compete with him. Experience shows that the cost of distributing goods by the jobber is very much less in percentage than any manufacturer, however well situated, can possibly hope to attain. There is no reason to believe that this will be altered at any time in the near future, if from no other fact than that the more successful retailers are buying in less and less quantities all the time, and are constantly increasing their assortments.

To reach the small trade that is visited by the jobbers, to sell them small bills in small quantities, taking the risk of payment and incurring the expenses of traveling, is a proposition which will always be untenable to the manufacturer. It is a simple business statement that it is much cheaper to distribute goods in large quantities than in small; hence it is that the jobber naturally buys cheaper than the retail dealer. Until the laws of nature and of economics are altered, this state of affairs will always prevail. Does not common sense dictate that a manufacturer who devotes so much time and thought and money toward making his goods more economically, toward better machinery, and all the various savings in manufacturing, should consistently carry this policy to its logical conclusion by making use of those superior facilities for the distribution of goods economically which have been developed by the jobber in the course of his experience? The machinery of distribution is one that every successful jobber does thoroughly understand, and as a general proposition it is one which the manufacturer knows least about. Especially is this so in any large and varied line of goods, such as goods in question.

Now, if this be the case, when the manufacturer goes direct to the retailer there is nothing else for him to do but to charge the retailer a higher price than he would the jobber, and he must add to the price which he would charge the jobber the increased expense of doing the business, and this increased expense to the manufacturer, as has been shown, is very much greater proportionately than to the jobber; so that there are no good

grounds for believing—save in very exceptional cases—that the retailer can ever hope to buy as cheap from the manufacturer direct as he can through the medium of the jobber. It is not a question of sentiment, but solely one of economics, of cold facts, and the successful retailers to-day, as a class, are those who are buying direct from the jobber, are buying in small quantities, in large assortments, are getting their orders filled promptly, and are not overloading themselves with goods which they do not then need and cannot sell within a reasonable length of time.

Who Suffers? Is It the Retailer?

One of the reasons stated in this little book for this new departure is that the manufacturer in question desires to prevent the "demoralizing price cutting." Now, what does this mean except that the retailer is to pay more for his goods, all things considered, than if bought from the jobber? The burden of complaint by the manufacturer about the jobber resolves itself into the statement that the jobbers cut prices to the retailers; in other words, they place retailers in a position to buy goods cheaper than the manufacturer would sell them direct. Now, wherein does the interest of the retailer lie in paying more for his goods? Does he find in such cases that he gets more for them? Is not the contrary the rule all the time? Are not selling prices of Sporting Goods constantly on the decline? Then again, if the retailer must pay a certain restricted price, below which he cannot buy, he must necessarily get more from the consumer—the user—the man for whom all this business is finally intended. Can he do it?

Isn't This in the Spirit a Trust Which Dictates?

To-day the drift of all legislation, all politics, all economics is distinctly in favor of the consumer. He is the man who is having his innings, and it is the crowning triumph of civilization that the consumer is buying not only the necessities, but the luxuries, of life, cheaper than ever before, and there is no sort of advanced and advancing civilization without this very thing. To meet this condition, to keep up with the times and to continue to make a satisfactory profit, the retailer must adjust his methods of buying accordingly. This necessarily means free and open competition, and a chance for the good buyer to get the benefit of his brains and ability. When a manufacturer endeavors by artificial means to raise the price of goods to the consumer it is an attempt on his part to stand squarely across the path of modern progress, to stop the advancing tide of low prices, and unless all signs of the times are wrong this attempt must end in foredoomed failure. The whole meaning of the consolidations of the day, the whole meaning of all anti-trust laws, is that the buyer shall be absolutely free and untrammelled in his choice, and that he shall have every opportunity of purchasing goods at the lowest possible prices. This is the reason that those consolidations and trusts which steadily reduce the price of goods have been successful and continue to exist and to flourish in spite of hostile legislation and much public prejudice, and it is equally the reason that those aggregations which, on the contrary, have advanced prices unduly and unnaturally have invariably come to grief after a short season of apparent prosperity. All the anti-trust laws of the various States and of the United States are framed solely in the interests of the buyer, and even the most casual observer of passing events must realize that there is a deep and steadily growing sentiment in this country against all trusts and all aggregations which infringe upon that which has grown to be regarded as the sacred and inherent right of every purchaser. It is even thought better that there should be unrestricted competition, with all its evils, than any attempt—and that a selfish one—to advance the prices of goods. The impelling force behind this popular sentiment is just and right, since it is founded upon those immutable principles of human nature which, sooner or later, must be the final guides of all business.

Is the Retailer a Free Man?

How can the retailer who is held down by iron clad dictation as to the price at which he shall sell his goods feel that he is a free man, and that he is conducting his business according to his own ideas? He has absolutely no voice in the matter, and is placed in the position of being merely a mouthpiece for the factory who has dictated a plan to him, not for his own benefit, but for the benefit of the manufacturer. Does not this strike at that feeling which is inherent in every man, and especially every American, that it is his inalienable right to run his own business without dictation from the outside? Then how about the consumer? How is he going to feel when told that a distant factory, about which he knows nothing and cares less, has ruled that he is to pay certain prices for his goods, and that the dealer who dares to sell him for less will have his source of supply cut off as a punishment? Will it be an easy matter to convince him—the final user—that this plan is for his benefit? Will it not be very difficult for him to see just "where he comes in?" Will he not naturally make up his mind that he would either buy those goods at less than the established rates, or that he will not buy them at all? And in such latter case will he not secure other goods which would suit him just as well? Then, furthermore, how is it going to be possible for the manufacturers to enforce their mandates upon the retailer? For if by their implied confession they have utterly failed to compel the jobbers—who are some few hundreds in number—to maintain the selling prices, how can they expect to succeed with the retailers who number several thousand? Is the nature of the retailer any different from that of the jobber? Is he less independent and hence more easily coerced? Is he, any more than a jobber, apt to do as some one else dictates to him, or rather as his own judgment directs? How is he to be led to accept the proposition that paying more for his goods will insure him a better profit? Then suppose that these selling prices are not maintained, as they certainly will not be in all instances, what will be the natural result? Have the manufacturers any specific means by which they can keep the offending retailer from buying these goods through another party? Experience has shown that this plan of cutting off the source of supply has always ended in absolute failure, for if a man wants to buy goods there is literally no way of keeping him from getting them.

Will Retailers Like the One-Price Plan?

Let us again take the example of the retailer who has purchased this brand of goods. He has advertised them, he has talked them up, he has spent time and money in introducing them, has dwelt upon their quality, and people who buy of him are convinced that they are making no mistake. Let us say for example that he buys 25 dozen Base Balls at a time. Just around the corner there is a man who sells soda water, chewing gum and candy. He always carries a small stock of Base Balls and Athletic Goods. He never devotes much time to talking up these goods, but has taken advantage of the demand which has been created by the larger retailer. He buys two dozen of these Balls at just the same price as the big brother around the corner. Will the large retailer persuade himself that this is for his own good? On the contrary, experience has shown that the moment that every man pays the same price for an article that every other man does, invariably that same man makes up his mind that he is going to buy that article for less money, and he will devote more time and thought and attention in accomplishing that end than perhaps the difference is worth. It may not be logical, but it is human nature, and business, after all, is founded on human nature. What will be the policy as to the sale of these goods to different people in the same place? Will they be sold to every man in town, or will the business be confined to one man? In the first instance the natural result will be that each man feels that he must have something different from his neighbor. Every suc-

cessful merchant knows that a large proportion of his success is due to the fact that he has something novel to offer the trade, something in the way of variety, something to catch their attention. Where will this plan be when ten other dealers in the same town have exactly the same thing at the same price? Will not the enterprising merchant look for some other goods in the same line, something that he can sell cheaper, if necessary, or something at least that has the merit of difference—something, in fact, on which he can create a demand for his own benefit, and not have his competitors likewise share in the results of his own brains and energy? Then in the second instance, where the sale is confined to one man in the town, every other dealer will take to fighting these goods as a matter of course. They will move heaven and earth to get something else if they cannot get the article in question. Is it best to have the friendship of one man and the enmity of ten, or the lukewarm competition of them all?

The principle of difference in price according to quantity is so well established by experience that it seems incredible that any one in this enlightened age should endeavor to reverse it. It is a fact that is recognized in courts of law, in the matter of railroads making a differential between carloads and less than carloads. It is founded upon reason and common sense, because it costs less to handle goods in large quantities than in small; consequently to state that there should be one price to all, regardless of the size of their order, is to state an economic contradiction, and is to cause every quantity buyer to realize that an arbitrary and unjust plan is being forced upon him.

As stated in the beginning of the article, this plan of marketing goods of this character has never been a success, and naturally enough has never had but one result. It has been given thoughtful, consistent and earnest trial, and the manufacturer has in each case found that it does not pay. Then there has been but one recourse—a resort to the sheltering wings of a combination or a trust. Immediately the attitude of the trust, whose combined experience has opened their eyes to the truth of the economic principle involved, has been exactly the reverse of that of the manufacturer in question. The large distributor has been sought out; the goods have been marketed through him in an economical and expeditious way, and the retailer in the end has bought his goods cheaper and made more money on them than under the old method.

Are Printed Confidential Trade Price-Lists Not a Harm to the Retailer?

The attempt to confine to certain parties confidential trade price-lists must necessarily do harm, because these lists always fall into the hands of people for whom they are not intended, with consequent demoralization and reduction of the retailer's profit.

What about the retailer who early in the season buys a good quantity—sufficient for a freight shipment? Later on he needs to place a small order to keep his stock unbroken. He is a long way from the source of supply; the goods are not sufficient for a freight shipment, so if they are to be obtained at all they must come by express. Does the manufacturer agree to pay express charges in such cases? If not, can the retailer afford to do so? Will he not naturally turn to the jobbing salesman who can ship him a lot of other goods—which together will be enough for a freight shipment? Why should there be any difficulty about the jobbers getting goods which will be right in all respects? There is neither divine right nor prescription in the manufacture of goods nowadays. Unless an article is covered by patents, it is not a very difficult thing to make it as good as "the other fellow" does. Money and brains will turn out almost anything in this country.

Every well posted merchant who handles the goods in question knows that they are no exception to this rule, and that identically the same goods are on the market under other brands at very much lower prices.

What better opportunity does a merchant want than that of buying the same goods for less money in any quantity he wishes, thereby insuring him a greater profit?

Reputation in business is a hard thing to build up—an easy thing to pull down. If a man gets out of "the swim" for a time, it is difficult to get back. When the retailer learns that other goods can be bought to as good advantage and of as good quality, the vital blow has been dealt to the prestige of the other article. It must also be taken for granted that every jobber will naturally oppose this method, not only from the motive of self interest, but because they will be able to show that the retailer will not profit by it, and will not be as well off as he was before. It will be his business to demonstrate plainly to the retailer that their interests are identical.

The experience, particularly of any manufacturer who endeavors to market goods in this way, will probably be very much of a surprise to him in the question of expense. The mere handling of goods in small quantities adds so greatly to the expense account that it can be appreciated only by those who have been through it. During the hard times from 1893 to 1896 retailers cut down the size of their orders and ordered more frequently, and the jobbers thus found that without any increase in the volume of business—sometimes, in fact, a falling off—the expense of transacting the business was increased in an enormous ratio. It costs almost as much to execute an order for 1 dozen as for 10 dozen, yet the volume of business is only one-tenth as great and out of all proportion to the expense incurred. Now all these expenses to the manufacturer have to go into the price of the goods, and the retailer will find himself in the position of paying higher prices for a certain class of goods, of having a selling price prescribed for him, so that he cannot make more profit if he would, and of being constantly confronted with equally satisfactory goods from the jobber that he can buy for less money and on which he can make a better profit.

IGNORING THE JOBBER.

The following letter from George H. Bartlett, whose experience and position in the trade give weight to his views, presents a number of considerations in opposition to the Spalding policy:

To the Editor: In certain letters recently published in *The Iron Age* referring to the so called new departure of A. G. Spalding & Brothers, I am surprised to see Mr. Spalding spoken of as the pioneer of this policy of disposing of manufactured articles direct to the retail trade. Pioneers are in fact as numerous as were the body servants of George Washington, and, like those servants, they are now mostly dead.

Not Pioneers.

Several manufacturers that I represented tried this policy years ago and made a failure of it. The fact is, a manufacturer can distribute his product for a smaller percentage of cost through the jobber than in any other way. The jobber expects only a moderate profit on his sales and has salesmen covering the territory more thoroughly than is practicable for a manufacturer to do. I do not understand that A. G. Spalding & Brothers are posing as philanthropists in this so-called new departure, but are simply in it for the additional profit which they hope to reap from the saving of the jobbers' profit. Probably, being good business men, they have considered the cost to themselves, which must be considerable, of employing many more salesmen than they did when selling through the jobbers.

The Granger Craze.

We all remember the granger craze, which system was going to wipe out not only the jobber but the retailer, the granger buying everything from a Fish Hook to a Reaper direct from the manufacturer, but I don't think any of us now find any champions of that granger idea.

There was an old chestnut told of a granger who died and who, on presenting himself to St Peter, was refused admittance. He thereupon tried the other place, where he naturally expected to receive a "warm reception," but his Satanic majesty also had no use for the granger and told him he would sell him brimstone for 20 per cent. off for cash and he could run a little hell of his own.

Six Per cent. Net.

Wholesale Hardwaremen would be entirely satisfied to net 6 per cent. on their sales. Should any manufacturer begrudge them that? I cannot recall the time within the last 30 years when some cranks could not be found who predicted the fall of the jobber, and yet the wholesale Hardwaremen have gone ahead increasing their sales until one house now will handle in dollars many times the quantity of Hardware it did ten years ago, notwithstanding the shrinkage in values.

A Bit of Experience.

I was once a small subscriber to stock in a proposed company in New England. The other stockholders were to be small merchants and farmers and one practical mechanic. We had our first meeting and the question came up, "How shall we dispose of our product?" I said there was but one practical way and that was to secure the co operation of the wholesale Hardware houses.

Ignoring the Jobber.

A small merchant said, "We can save a great deal of money by selling directly to the retailer." A farmer who kept himself in fair condition on a diet principally of beans and cider, and who had accumulated quite a little money, said that "the product of our company ought to be sold directly to the farmers and other consumers, thus saving all dealers' profits." As the farmers were in the majority it was voted that the goods should be sold directly to the consumer, whereupon the small merchants and I retired from the meeting and the farmers organized what proved to be a little hell of their own.

The Penalty.

The article to be manufactured really had considerable merit, but after spending much money—most of the farms had to be mortgaged—there was still no trade in the article beyond that done locally in New England. In due course the factory was closed and finally sold out at auction to a

Wide Awake Manufacturer

who stood well with the jobber. Within a short time the article was taken up and pushed by many of the leading wholesale firms and is to day almost as staple as ten-penny Nails.

"Let Well Enough Alone."

That old saying, "Let well enough alone," would not be a bad one for manufacturers to keep before them when they feel tempted to drop their old friends, the jobbers, and peddle their goods directly to the retailer. Several Cutlery manufacturers have tried this "direct business" and now wish they hadn't. Unlike Topsy, they haven't "just growed," and some are even now trying to get back into the fold of the jobber, even offering to drop the retailer entirely in certain territory if the jobber will only forgive them and take up their lines again.

Stanley Rule & Level Company.

STANLEY RULE & LEVEL COMPANY, New Britain, Conn., and 107 Chambers street, New York, issue under date January 1, 1899, a revised discount sheet referring to their price-list of January, 1898, and giving discounts on the large and varied line of Tools which they manufacture. The prices named are practically the same as those shown by their last discount sheet, except that advanced prices are announced on Plumbs and Levels and Ivory Rules. They also issue a new page to be inserted in their catalogue, in which they illustrate the Iron Planes which they are now furnishing with corrugated bottoms, and giving list prices. New Trammel Points are also shown, and Bailey's Adjustable

Block Plane, with "Hand-y" feature on both sides of the tool. Stanley's Iron Block Planes, No. 100, and improved Marking and Mortise Gauges are also illustrated. For the convenience of the trade a separate pamphlet devoted to Bailey's Adjustable Planes and other Tools is issued by the company. A card containing a condensed price-list of their Planes, giving number and list price, is also issued, with a list of their Plane Irons and the Planes for which they are adapted. A circular is also sent out by the company in which they call attention facetiously to their "Odd Jobs" and other goods which should have a place in a carpenter's kit.

Arcade Mfg. Company.

ARCADE MFG. COMPANY, Freeport, Ill., having lately purchased the business of the Warner Hardware Company of that city, consisting of the entire stock of material and manufactured goods, machinery, tools, patterns, patents, good will, &c., and having transferred the effects to the factory, are now prepared to supply the trade with all the articles formerly made by the Warner Company. The addition of these articles to those already manufactured by the Arcade Company will give them an especially large and desirable line of light Hardware and Patented Household Novelties. Some of their manufactures are Door Checks, Hangers, Springs, Bells and Braces, Spring Hinges, Cork Pullers, Lemon Squeezers, Nut Crackers, Ice Shaves and Picks, Coffee Mills, Wire Stretchers and Carriers, Cast Hammers and Hatchets, Stove and Warehouse Trucks, Garden Sets, Mincing Knives, Soldering Sets, Hack Saws, Sash Lifts, House Numbers, Barn Door Bolts and Latches, Tuyere Irons, Corn Huskers, Iron Toys, &c. This important addition to their business will necessitate an enlargement of their plant, and the company are planning to build in the spring, as soon as the weather will permit, a substantial brick building, 120 x 50 feet, two stories high, which will be equipped with all modern machinery and appliances. A new catalogue with illustrations and descriptions of their extensive line of goods will be issued early the present month.

Calendars, Holiday Greetings, &c.

GOODSELL BROS. & CO., Greenfield, Mass.: Calendar for 1899. The illustration shows a brownie boring shavings out of a plank with a Goodell Changeable Speed Breast Drill.

BRUCE & COOK, 186-190 Water street, and 248 250 Pearl street, New York: This old and well-known house in their eighty-seventh year, issue their calendar in the form familiar to the trade. It is accompanied by a circular in which the trade is greeted appropriately and reference made to special lines.

F. E. MYERS & BRO., Ashland, Ohio: Calendar for 1899 is attached to a colored hanger sheet in which a very large number of goods in their extensive line of Myers Pumps and Hay Tools are illustrated. The hanger is about 48 x 18 inches in dimensions.

TWENTIETH CENTURY MFG. COMPANY, 17 Warren street, New York: Banner for hanging in the store, calling attention to their Twentieth Century Acetylene Gas and Kerosene Oil Bicycle Headlights and the Twentieth Century Cyclometer.

THE BOEBINGER HARDWARE COMPANY, Cincinnati, Ohio: Eleventh annual calendar. The company are dealers in Cutlery, Tools, Factory and Mill Supplies, Belting, &c.

J. S. MITCHELL & Co., Sherbrooke, P. Q.: With their compliments they send out a ruled memorandum book with calendar on back cover, the book being inclosed in a neat wallet, vest pocket size. The house are dealers in Iron, Hardware, &c.

Meldinger & Fetter have succeeded Meldinger Bros. at Wathena, Kan., handling Shelf Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c. They are making some repairs in the store.

Price-Lists, Circulars, &c.

PORTER BLANCHARD'S SONS COMPANY, Nashua, N. H.: Catalogue containing a very complete list of Dairy and Creamery Apparatus and Supplies. Particular mention is made of the Blanchard Churn, which this firm have manufactured for some years. It is made in five sizes for family use, holding from 4 to 32 gallons and churning from 2 to 16 gallons. The Blanchard Factory Churn is made in two shapes, cylindrical and square, having a churning capacity of from 30 to 250 gallons. These Churns, it is stated, are also used extensively as mixers in the manufacture of emulsions, patent medicines, prepared liquid foods, ready made paints and other articles requiring the most thorough mixture of ingredients. To meet the demand of those who only want a Churn large enough to make butter for home use, the company have placed on the market the Lightning Churn, which is shown in their advertisement in another part of this issue. This Churn, they state, is small, churning from 2 to 5 gallons, and is very compact and efficient. Full information and prices are given in their latest catalogue.

HOXIE & CLARK, Rochester, N. Y.: Lightning Bread Cutters. An illustrated circular and price-list shows Bread Cutters in three sizes adapted for use in large public institutions, hotels, restaurants, cafés, &c. The Cutters are adjustable to any thickness of slice and are made wholly of iron and steel.

THE FAIRBANKS COMPANY, 311 Broadway, New York: Illustrated descriptive catalogue of supplies for mills, factories and railroads, steam specialties, Tools, Machinery and Fairbanks Scales. It is bound in cloth, with stiff boards, and there are 240 pages, each $9\frac{1}{4} \times 6\frac{1}{2}$ inches. In the back of the book are 12 pages, giving useful information in the way of tables, weights and measures, rules for various calculations, &c. They also issue an exact reproduction of this catalogue, half size, for engineers and others to carry in the pocket, either of the books being sent on application.

UNITED STATES CLOTHES PIN COMPANY, Montpelier, Vt.: The U. S. Clothes Pin. The company issue a pamphlet devoted especially to their Clothes Pin, which is referred to as the only one which firmly clasps the fabric to the line. The pamphlet also illustrates their U. S. Paper Clip, U. S. Carriage Trimmers' Clip, U. S. Photograph Clip and U. S. Test Tube Holder.

P. & F. MFG. COMPANY, Reading, Pa.: Bicycle Saddles, Tool Bags, Pedals, Pumps, &c. Their 1899 catalogue illustrates their P. & F. Saddles, Penn Pedals, &c.

NORTH BROS. MFG. COMPANY, Philadelphia: "The Yankee Tool Book." An attractively printed pamphlet is issued, devoted to their Yankee Ratchet Screw Driver No. 10, Yankee Spiral Ratchet Screw Driver No. 30 and Yankee Automatic Drill No. 40.

FRANK L. JONES, Utica, N. Y.: Thirty-fourth annual price-list, 1899. Prices are presented on a large line of apparatus, supplies and specialties for cheese factories, creameries and dairies.

ABBEY & IMBRIE, 18 Vesey street, New York: Illustrated catalogue, No. 157, containing 116 pages, illustrating and describing their extensive line of Fishing Tackle.

SAVAGE ARMS COMPANY, Utica, N. Y.: 1899 catalogue. The company have issued a 56-page catalogue fully illustrating and describing their Savage High Grade Hammerless Military and Sporting Rifles and Carbines, &c.

Trade Items.

THE FAIRBANKS COMPANY, 311 Broadway, New York, have recently been made the exclusive sales agents for the Eastern States for the Pipe Threading and Cutting Machines made by the Merrell Mfg. Company, Toledo, Ohio.

ATTENTION is called to the full page advertisement in this issue of the De Kalb Fence Company, De Kalb, Ill., referring to the various kinds of Wire Fencing which they manufacture. They make Field and Hog Fencing, Poultry Fence, Steel Web Picket Fence and Garden and Rabbit Fence, which cover all purposes for which special kinds of Fencing may be required. They state that all of their Fencing is made of the very best galvanized steel wire. It is put up in rolls, so as to be easily handled by the hardware trade. They also manufacture a complete line of Walk, Drive and Farm Gates, Steel Posts, Railings, &c. They call attention to the extent of their plant, covering over 7 acres of ground. It is run entirely by electric power. They issue illustrated circulars, showing the special features of their Fencing and giving very interesting information.

SHIPMAN, BRADT & CO., De Kalb, Ill., elsewhere in this issue have an advertisement setting forth the fact that they are manufacturers of Delivery Wagons specially de-

signed to meet the requirements of the Hardware trade. They issue an illustrated circular, which gives full particulars of these Wagons as well as Delivery Wagons intended for other classes of merchandise.

THE LAWSON MFG. COMPANY, manufacturers of the Racine Lawn Mower and other specialties, 111 Mason street, Milwaukee, Wis., have established a branch office at 51 South Jefferson street, Chicago. Their Lawn Mower is quite a departure from the usual style of Lawn Mower, being so constructed that the machine will cut within $\frac{1}{8}$ inch of a border. It dispenses with the wooden roller and has other features which are fully set forth in the illustrated circulars issued by the company. Attention is called to their advertisement in this issue.

L. & I. J. WHITE COMPANY, Buffalo, N. Y., and 48 Centre street, New York, are sending out an attractive souvenir in the form of a ship Axe, handsomely nickel-plated, the handle of which is in the form of a planer knife. It serves the purpose of a paper cutter and a straight edge.

THE IVER JOHNSON ARMS & CYCLE WORKS, Fitchburg, Mass., have had a decision in their favor by the Court of Appeals in the Lovell & Johnson case. This suit has been in the courts for several years and has been stubbornly contested, prominent legal authorities being engaged in it.

MANUFACTURERS doing an export business will observe the Special Notice on another page in which N. L. Wills, A17-18 Produce Exchange, New York, offers his services as freight broker in connection with the shipping of goods to foreign lands. This opportunity is deserving the attention of those desiring their export shipments looked after in this way.

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Request for Catalogues, Quotations, &c.

TEMPLE HARDWARE COMPANY, Temple, Texas, advise us that they would be pleased to receive catalogues and quotations on up-to-date House Furnishings. During the coming year they are expecting to carry a much larger stock of this class of goods.

Miscellaneous Notes.

Dexter Knives and Blades.

Dexter Harrington & Son, Southbridge, Mass., manufacturers of the Dexter knives and blades, refer to their goods as made solely for cutting purposes, and not for show, and advise us that all knives are ground sharp and honed before leaving the factory. This cutlery business was established in the Harrington name at Southbridge in 1818, or 80 years ago. The business has increased to such an extent as to necessitate additions to capacity of plant from time to time. The concern have recently completed a substantial addition, which will largely increase their output. New and special machinery is being installed, and they expect to double last year's production during 1899. The line of goods shown in their illustrated catalogue include shoe knives in a variety of shaped blades; kitchen, carving, butcher, skinning and bread knives. Rubber, shoe and cloth blades in various shapes are also shown. The kitchen knives are furnished in five styles of blade, with either black or light enamel handles put on. In the same grade are made 6 inch meat and 7-inch bread knives. A line of butcher knives, not shown in the catalogue, are now being made in sizes from 5 to 14 inches.

Southington Cutlery Company's New Goods.

Southington Cutlery Company, Southington, Conn., and 98 Chambers street, New York, have just added to their large line of patterns of pocket knives a handsome pen knife for ladies' use or to be carried in the vest pocket. It is brass lined, polished inside and out, has pearl scales without bolsters, being made in no other covering, and in size is $2\frac{1}{2}$ inches long, $\frac{3}{8}$ inches wide at one end and $9\frac{1}{16}$ wide at the other, with a thickness of about $3\frac{1}{16}$ inches. It has two blades of different sizes and a nail blade on the back with a flat file side and a guttered or grooved file side opposite.

The company are also improving their entire line of cutlery and expect soon to exhibit some new shapes and styles of jacks and three blades.

They have a line of moderate priced polished wrought steel scissors, which it is their expectation to have ready for market in about 30 days, when they will publish illustrations and prices of them.

In order to have their line of pocket knives complete from the cheapest to the best, they have supplemented their extensive assortment by importing a large number of the cheap grades of German goods, such as American manufacturers cannot compete with on the present tariff.

The Quincy Steel Pump and Tubing.

The Quincy Hardware Mfg. Company, Quincy, Ill., are manufacturing a chain pump with a sheet steel box, and are also making steel pump tubing. The box is made of No. 22 galvanized sheet steel with cast rims at the top and bottom. The box, which is larger and higher than usual, is painted with four coats of paint, after which it is stenciled and then varnished, presenting an attractive appearance. The metal box is said to be much more durable than the usual wood box. The galvanized steel tubing is intended to be used in place of the ordinary wooden tubing. The advantages claimed for the galvanized tubing are that it is always as clean and wholesome as a drinking cup, that its smoothness inside saves the rubber buttons and makes the pump work more easily, that it is light and easily put in or taken out of a well, and that it will not rot. The tubing is made of the best quality of No. 24 galvanized sheet steel, seamed water tight, and is furnished in lengths of 4 or 10 feet.

Universal Sharpening Machine.

John Chatillon & Sons, 85-93 Cliff street, New York, are marketing the Universal sharpening machine, illustrated in the accompanying engravings. Fig. 1 represents a hand power machine for household and general use, there being two styles of finish, No. 2, japanned, and

No. 4, nickel plated. In operation the sharpening wheels are rapidly revolved in opposite directions by turning the crank on the large wheel, the blade to be ground being drawn steadily from heel to point a few times between the guides, as shown in the cut. The cutting wheels are so placed as to give a suitable bevel to the edge without re-



Fig. 1.—Universal Sharpening Machine, Household Style.

quiring any special skill on the part of the individual. The gauge shown in Fig. 2 is provided so that when the grinding disks become worn they can be easily reset, which is done by loosening the thumb screws and lowering the arms, when the gauge is taken off, as shown in Fig. 1, and reversed with the projecting pin upward. Then the arms are raised until the grinding wheels touch the pin on

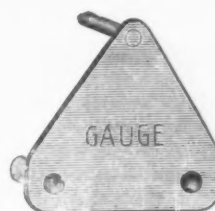


Fig. 2.—Gauge for Resetting Grinding Wheels.

the gauge, when the arms are again fastened by tightening the thumb screws. There is sufficient play between the guides to take very thin or thick blades. Metal table knives, silver plated, can be sharpened without damaging the blades. This style of machine is put up in neat boxes, the dimensions of which are $2\frac{1}{2} \times 5\frac{1}{2} \times 12$ inches, and the

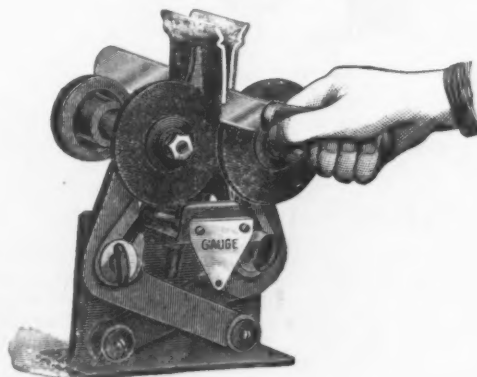


Fig. 3.—Power Sharpening Machine without Stand.

weight 4 pounds. Fig. 3 shows the No. 1 machine for foot and steam power, Fig. 4 showing it as used by foot power, complete with stand. It is the same in principle with only the necessary modifications for power. This machine with stand is crated, the dimensions being $1\frac{1}{2} \times$

2 x 4 feet; weight, 100 pounds; and is designed for pack-
ers, canners, butchers, farmers, restaurants, hotels, &c.

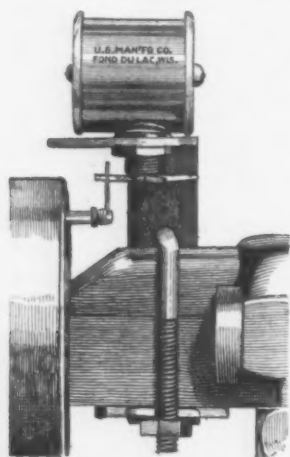


Fig. 4.—Machine for Foot Power with Stand Complete.

The grinding wheels can be replaced, if necessary, at a moderate cost.

Carriage Odometer.

The accompanying cut represents a carriage odometer offered by the U. S. Mfg. Company, Fond du Lac, Wis. It is shown herewith attached to the axle of a carriage and operated by a stud on the hub of the carriage wheel. While recommended by the manufacturers espe-



Carriage Odometer.

cially for use by liverymen, physicians, horsemen, &c., as of great practical value, it will also be found convenient by others.

Majestic Acetylene Gas Lamps.

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, are about to put on the market the Majestic acetylene gas bicycle lamp, as here shown, Fig. 1 illustrating it ready for use. It is 7 1/4 inches high, is made of strong brass, has a hanger or bracket of tough steel, will burn four hours, and is full nickel finish. The letters of the sectional cut describe it as follows: A lantern body, B water fount, C gas chamber, D gas chamber bottom, E bottom of carbide holder, F carbide holder top, G water distributor, H water feed tube, I water valve, J removable valve seat, K water valve lever, L burner tube, M 1/4-foot lava burner tip, N rubber gasket, O reflector door, P door catch and R lens retaining wire. Fig. 3 is the carbide holder, graduated to indicate one to four hours' supply, so as to

economize the material which can be easily added any time more is required. The front reflector is referred to as a section of a perfect parabola, which, in con-

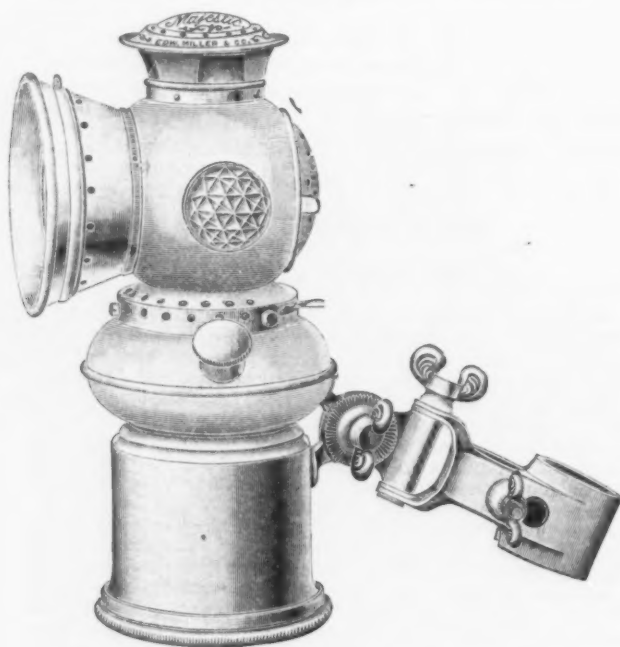


Fig. 1.—The Majestic Acetylene Gas Bicycle Lamp.

nection with the back reflector, throws all rays of light forward in such a manner as to give a clear, strong field of light illuminating all objects ahead of the rider for a

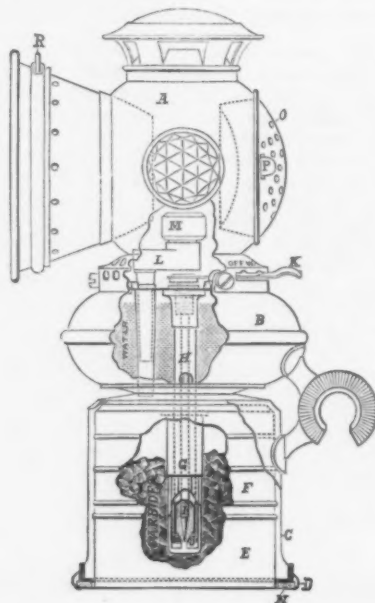


Fig. 2.—Sectional View of the Lamp

distance of 100 feet. The back reflector is hinged to give access for lighting and cleaning. The side lights are 1-inch red and green jewels. The hanger permits of

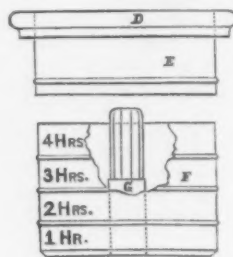


Fig. 3.—Sectional View of Carbide Holder.

the lamp being carried on either fork or head and the size of the flame is regulated by a small back lever. Regular commercial carbide in bulk is used.

Billings' Cam Lever Wrench.

The cuts herewith shown represent a cam lever wrench, full size, put on the market by the Billings & Spencer Company, Hartford, Conn. Fig. 1 shows the wrench with the cam lever open ready to engage the nut

gas pipes, or for other similar work requiring lead joints. It is also suitable for melting babbitt metal or other metal alloys for car boxes or similar work, and is sufficiently powerful to melt copper for small foundries. Its adaptability will be recognized for a wide range of work of this character. It consists of a 10-gallon tank, above which is a frame for holding the melting pot or

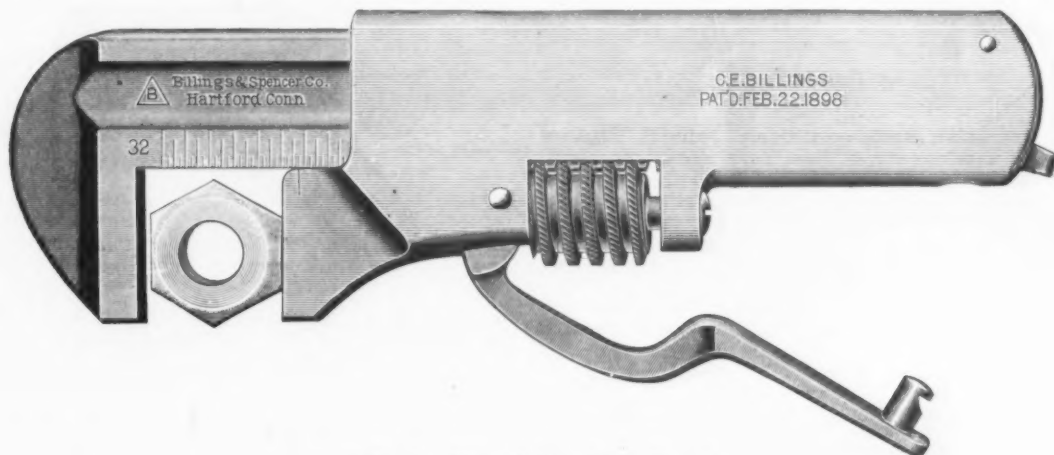


Fig. 1.--Billings' Cam Lever Wrench.

or other piece to be grasped. In use the sliding jaw of the wrench is screwed up in the usual manner until it nearly grasps the nut, when the cam lever is pressed toward the handle until it closely grips the nut, as shown in Fig. 2, when the sliding jaw will be forced against the nut, it is explained, holding it firmly without bruising the corners. The lever is released by pressing down

kettle. The tank is made of heavy galvanized steel plate, is 16 inches in diameter and 12 inches high and is tested to 200 pounds' pressure. The frame for the melting pot is mounted on four braces, which are solidly riveted to the tank. Handles are riveted to the sides of the tank, enabling the furnace to be easily carried to any place convenient to the work. The manufacturers also contem-

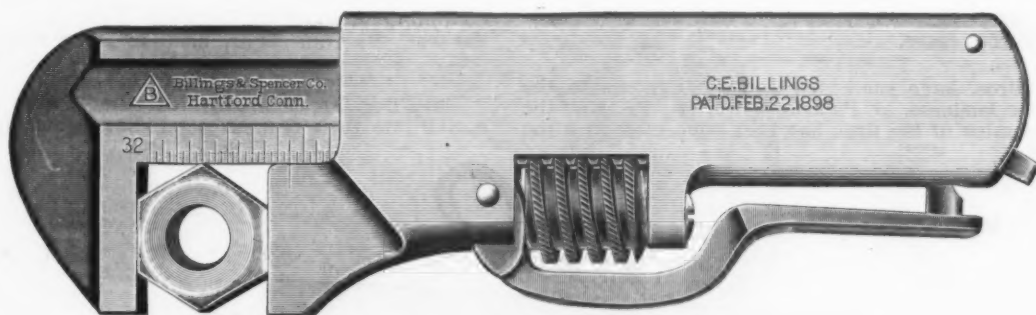


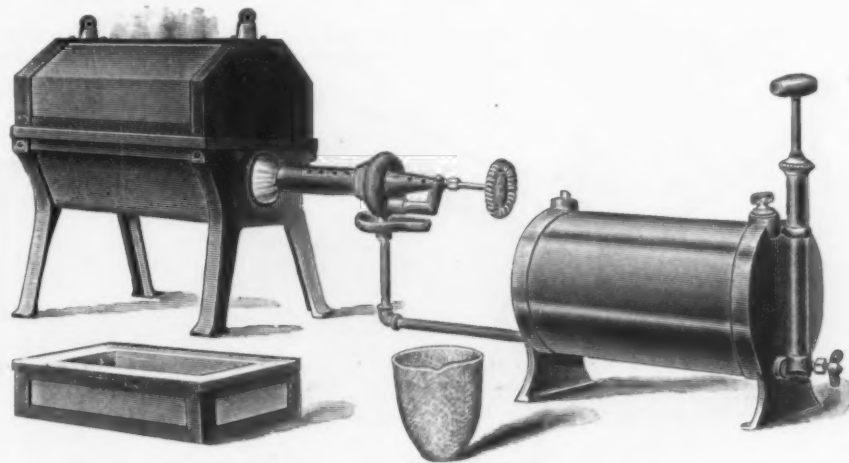
Fig. 2 -- Wrench Gripping Nut

the catch at the end of the handle, when it will be free and fly outward.

The Giant Portable Melting Furnace.

The White Mfg. Company, 158 Indiana street, Chicago, have brought out the Giant portable melting fur-

plate mounting it so that it can be rolled on a truck. The two burners are set at an angle of 40 degrees so that the flames will strike the bottom of the kettle. A pet cock is placed on the side of the body on which the burners are mounted to convey the gasoline into the drip cup below for starting the burners. These burners are the same as those used on the company's Giant brazer, with



The Giant Portable Melting Furnace

nace, invented by the superintendent, John C. Dupee, which is herewith illustrated. The furnace is specially adapted for use in connection with laying water pipes,

some slight modifications. The air pressure is obtained by the use of an ordinary bicycle foot pump. A wind guard is placed around the burners so as to protect the

flames being blown away from the bottom of the kettle when used in the open air. The whole outfit weighs 145 pounds, including the melting pot, and has been found by actual test to melt 100 pounds of lead in 20 minutes. It is so simply operated that the ordinary laborer will have no trouble in learning how to handle it. When the furnace is used for melting copper it is necessary to enlarge the fire chamber and line it with circular fire brick. It is intended to be operated with either kerosene or gasoline.

Dead Easy Trap.

E. S. Hotchkiss, Bridgeport, Conn., John H. Graham & Co., 113 Chambers street, New York, direct representatives, have put on the market the Dead Easy rat and mouse trap, as here shown in various positions. Fig. 1 represents it baited and set for use, Fig 2 illustrating its appearance when sprung, the animal presumably caught, while the remaining cut describes the easy way in which the victim can be got rid of. There are two sizes, respectively for mice and rats. The mouse size is packed one dozen in a package, and five gross in a



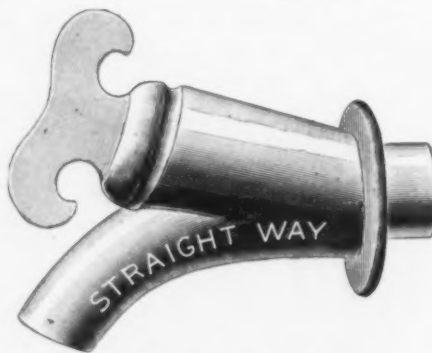
Fig. 1.—Dead Easy Rat and Mouse Trap, Baited and Set.

case, the larger size being put up in half dozen packages and one gross cases.

Law Bros. have succeeded J. D. Baughman in the Hardware business, at Pulaski, Iowa. K. P. Law, the senior member of the firm, has been connected with the

Straight Way Faucet.

Hoxie & Clark, 42-44 Stone street, Rochester, N. Y., have put on the market a straightway faucet for use



Straight Way Faucet

on oil cans, &c., as shown herewith. It is referred to as an angle plug and still a straight way, or in other words as having a direct flow. The packing is loose and so attached to the plug that it precludes, it is explained, any

possibility of wear on the same when in contact with the seat. The faucets are made of brass, nickel plated.

Shiel-Dorman Company, Ritzville, Wash., have just moved into their new brick building, where in addition

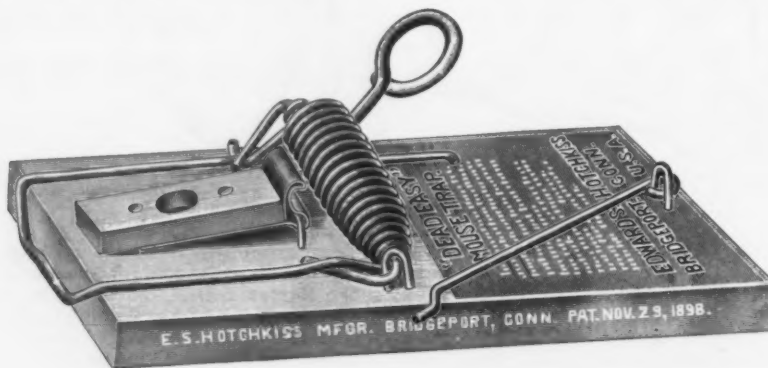


Fig. 2.—The Trap Sprung.

store of S. C. Sloss, and his successors, W. B. Jordan & Co., at Moulton, for the past 21 years, and has thus had

to their former line of Hardware, Stoves, Tinware, Farm Implements and Machinery, they are handling Lamps,

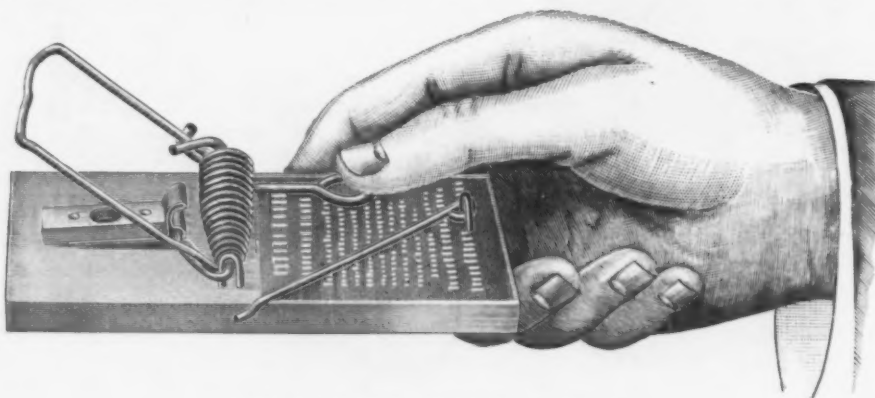


Fig. 3.—Method of Emptying the Trap.

a lot of practical experience. Mr. Law's brother has been for some time connected with the Wabash Railway Company.

Glassware, Crockery and Furniture. W. W. King has taken an interest in the business, and their cash capital has thus been materially increased.

The Gem Corundum Scythe Stone.

The Chicago Wheel & Mfg. Company, manufacturers of emery wheels and other specialties, 39 West Randolph street, Chicago, have just placed on the market the Gem corundum scythe stone, which is herewith illustrated. A view of the stone is given in Fig. 1. It has, it is stated, a

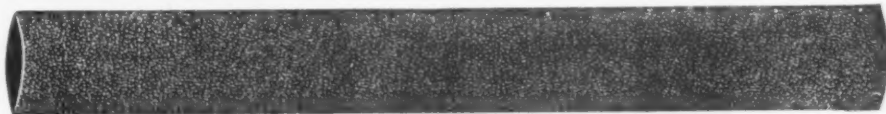


Fig. 1.—The Gem Corundum Scythe Stone.

fine surface, the best quality of corundum being used in its manufacture, while its shape is such as to adapt it to the purpose for which it is intended. It is manufactured with a steel center, as shown in Fig 2, in which a portion of the surface is cut away to bring the steel center into view. This is designed to prevent the stone breaking with rough usage. It is claimed that it will last much longer than the natural stone, while it is made by an improved process so that it can be sold at as low a

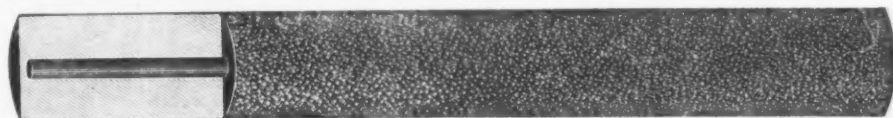


Fig. 2.—Steel Center.

price. It is water proof, and is made in two sizes—namely, 10 and 12 inches in length.

Glidden's Metallic Repair Outfit

Dame, Stoddard & Kendall, Boston, Mass., as sole selling agents for the manufacturers, are introducing the metallic repair outfit illustrated herewith. As shown in Fig.



Fig. 1.—Glidden's Metallic Repair Outfit

1, the outfit consists of a key, threaded at the lower end, and plugs with hinged heads. In use the flat plate, or upper part of the plug, is put loosely upon the key, as in Fig. 1. The lower end of the key is screwed into the lower part of the plug, which is turned sideways and inserted in the hole, leaving the flat plate on the outside of



Fig. 2.—The Puncture Repaired.

the tire. The key is drawn back so that the lower part of the plug will rest flat on the inside of the tire. The flat plate is now screwed to the lower part of the plug with the aid of a wrench provided for the purpose, though not here shown. The key is then removed, making the repair permanent, as shown in Fig. 2. The plug is referred to as not injuring the tire or its appearance. A circular cutter is combined with the wrench, to be used

when the puncture is too small to admit the plug. It is pointed out that the outfit will repair a puncture at once, without the use of cement, and that any woman or child can use it; also that the hinged head of the plug prevents the cutting of the tire. Two sizes of plugs are furnished with each kit, which are designed to fit ordinary punctures. The hinge head is referred to as a

feature not found in other metallic repair kits. Each kit is contained in a metallic box 1 x 1½ inches in size.

The New Sherman Hose Clamp.

The H. B. Sherman Mfg. Company, Battle Creek, Mich., have brought out a new style of the Sherman hose clamp, as herewith shown. The clamp is illustrated in Fig. 1. The ears are rounded for small sizes, making the

clamp especially neat in appearance and for use. It has been found difficult, it is remarked, to couple up large sizes of hose for steam, brewers' use and for other heavy duties, making them uniformly tight against leakage. Large sizes of the Sherman clamp are made for such pur-



Fig. 1.—The New Sherman Brass Hose Clamp.



Fig. 2.—The Vise Jaws

poses of extra heavy sheet brass, with ears shaped for use in vises. These large sizes can be put on a hose with the aid of a screw driver, but to guard against any possibility of leakage the use of a vise is recommended. A pair of vise jaws are shown in Fig. 2, and in Fig. 3 a vise illustrating how a set of jaws can be used on all the different sizes of large clamps, making their application rapid and

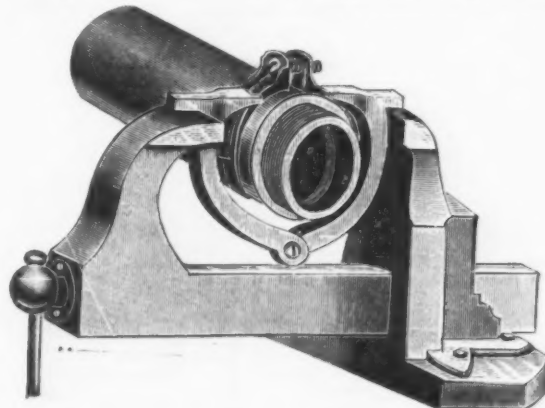
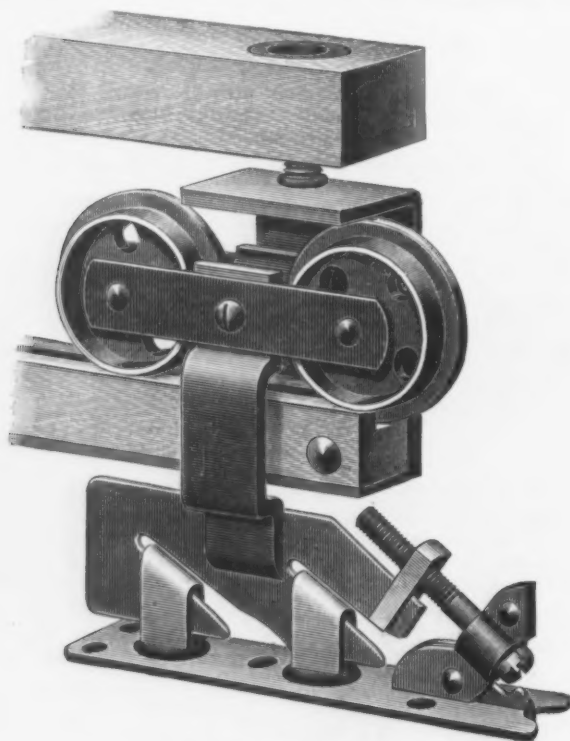


Fig. 3.—Method of Applying Clamp with a Vise.

certain. The company manufacture 28 different sizes of clamps, and advise us that many hardware, rubber and other jobbers of hose carry them in stock. The company suggest that dealers who are troubled with their hose leaking at the coupling can have this corrected by ordering their hose coupled at the factory with the Sherman clamp.

Le Roy Noiseless House Door Hanger.

The Wilcox Mfg. Company, Aurora, Ill., have brought out a new house door hanger named the Le Roy Noiseless, an illustration of which is herewith presented. The company state that their object in getting up this hanger has been to meet the demand of leading architects and builders who have been calling on them for a hanger that is absolutely noiseless. The maple wood shoe attached to the steel track gives the first result wanted, making the operation of the hanger, it

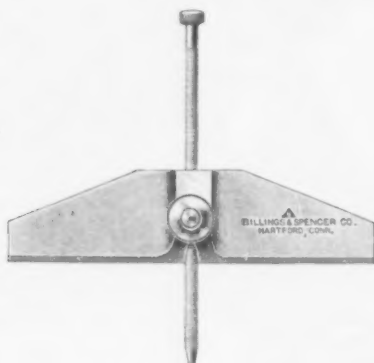


Le Roy Noiseless House Door Hanger.

is stated, perfectly noiseless. The track is adjustable as well as reversible and gives the hanger, it is explained, all the good features while it contains none of the objectionable ones of hangers heretofore offered. The company call particular attention to the fact that the track can be adjusted without removing any of the finish or wood work, being adjustable through the track, which is a feature referred to as entirely new and thoroughly practical. The company are now ready for the market on this hanger, having doubled their capacity for the manufacturing of their specialties.

Billings' Quick Adjusting Depth Gauge.

Billings & Spencer Company, Hartford, Conn., have put on the market the quick adjusting depth gauge



Billings' Quick Adjusting Depth Gauge.

shown in the accompanying cut. In use by making one half turn of the nut and pressing on the same the screw threaded rod is released from the half nut and can then be moved freely up and down, releasing the pressure; the half nut is locked with the screw by action of the spring

inside the nut. Fine adjustment can be made by turning the screw. When adjustment is obtained the nut is screwed tight to prevent the screw turning. The gauge is designed principally for the use of die sinkers and tool makers.

Myers' House Pumps.

F. E. Myers & Bro., Ashland, Ohio, have put on the market, more particularly for the plumbing trade, a house pump of better construction throughout than the old style pump. This is in response to a demand for

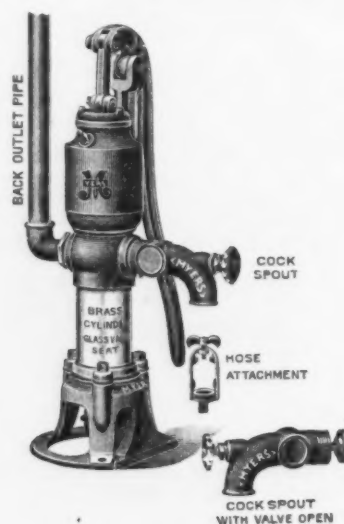


Fig 1.- Myers' House Pump with Cock Spout.

something that will keep pace with the rapid strides made in fine plumbing. The cylinder of this pump is seamless drawn brass, and is equipped with their patent glass valve seat with special composition rubber check valve playing on the seat, together with reservoir head and siphon spout. The cock spout is arranged on the Fuller bib plan, as in Fig. 1. The pump can be made right or left hand, is double acting in power and discharge, and throws an even, constant stream. By raising the handle the pump can be drained to prevent freezing. The patterns of the pump throughout are artistic in appearance, and the finish is said by the makers to be very attractive. The base is painted blue and



Fig. 2 - House Pump without Cock Spout

the upper portion a bright red. The seamless drawn brass cylinder is finely burnished and the entire construction is referred to as attractive and ornamental, as well as the best they can produce.

The Bare Brothers of Middletown, Ohio, have purchased a half interest in the business conducted by W. A. Remy & Co. of Mansfield, and the style has become Remy & Bare Bros. The new firm will continue the Hardware business in the Purdy Building, on South Main street, Mansfield, making some additions to their former large line.

Current Hardware Prices.

JANUARY 4, 1899.

NOTE.—The quotations given below represent Current Hardware Prices, whether made by manufacturers or jobbers. They apply to such quantities of goods as are usually purchased by retail Hardware merchants. Very small orders and broken packages often command higher prices, while lower prices are often given to larger buyers.

The character @ is used to indicate a range of price; thus discount 50 & 10 @ 50 & 10 & 5%, signifies that the goods in question are sold at prices ranging from 5% to 10% to 50 & 10 & 5%.

Many of the lists referred to in the following quotations are given in *The Iron Age* Standard Hardware Lists (price 50 cents). On many other articles, however, the different manufacturers have their own lists, which they will send to the trade on application. In the advertising columns will be found the announcements of manufacturers of nearly all kinds of Hardware, who will be pleased to furnish the trade information in regard to their goods and prices.

Adjusters Blind—

Domestic, # doz. \$3.00...33½@33½@10%
North's...10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Taplin's Perfection...45%

Ammunition—See Caps, Cartridges, Shells, &c.

Anti-Rattlers—

Burton's No. 1...# doz. pr. \$1.00
Burton's No. 2...# doz. pr. \$0.75
Fernald's, Wire...# doz. pr. \$0.75

Anvils—American—

Eagle Anvil, # D...74@74½
Hay-Budden, Wrought...84½@84½
Horseshoe brand, Wrought...94½@94½
Samson, # D...74½@74½
Trenton, Wrought...84½@84½

Imported—

Armitage's Mouse Hole...84½@84½
Solid Swedish Steel...10½@10½
Peter Wright's...94½@94½

Anvil, Vise and Drill—

Millers Falls Co., \$18.00...20%

Apple Parers—See Parers, Apple, &c.

Augers and Bits—

Common Double Spur...75@105@80@5%
Boring Machine Augers 75@105@80@5%
Car Bits, 12-in. twist 60@105@70@10%
Adams Art Auger Bit...30%
Jennings' Pattern Car Bits...60@60@10%
Jennings' Pattern Auger Bits...70@105@5%
Cincinnati Bell Hangers' Bits...40%
Forster Pat. Auger Bits...25%
C. E. Jennings & Co.:
No. 10 ext. tip. R. Jennings' list...40@40@10%
No. 30. R. Jennings' list...50@105@30%
Russell Jennings...25@105@2%
L'Hommedieu Car Bits 15@105@10%
Pugh's Black...30%
Pugh's Jennings' Pattern...35%
Snell's...70@70@5%
Wright's Jennings Bits (R. Jennings' list)...50%

Bit Stock Drills—

Standard list...60@105@90@10@10%
Cincinnati, for metal...50@50@10%
Syracuse, for wood...40%
W. & B. Wood Boring Bit Drills...40%

Expansive Bits—

Clark's small, \$18; large, \$26...50@50@10%
Lavigne's Clark's Pattern, No. 1...# doz. 226; No. 2, \$18...50@50@10%
Steer's No. 1, \$26; No. 2, \$18...40@40@5%
Swan's...40@40@10%

Gimlet Bits—

Common Double Cut...# gr. \$2.75@3.25
German Pattern...# gr. \$5.00
Double Cut, leading makers...50@50@10%
See also Gimlets.

Hollow Augers—

Bonney's Adjustable, # doz...\$16.00
Cincinnati Adjustable...25@10%
Cincinnati Standard...25@10%
Douglass...35@35@10%
Stearns', Common, No. 6...10%
Stearns', all other numbers...25@10%

Ship Augers and Bits—

L'Hommedieu's...15@105@15@10@10%
Snell's...30@105@10%
Snell's Ship Auger Pat'n Car Bits...40@40@10%
Watrous...40@40@10%

Awl Hafts, See Hafts, Awl.

Awls—

Brad, Handled...# gr. \$3.00@3.25
Brad, Shouldered, Cheap...# gr. 70@75%
Brad, Shouldered, Good...# gr. \$1.50@1.65
Peg, Pat...# gr. 35@35%
Peg, Should...# gr. \$1.85@1.45
Scratch, Handled...# gr. \$3.50@4.00
Scratch, Socket...# doz. 95@1.00
Sewing, Common...# gr. 85@1.00

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

First quality, best brands...\$5.00@5.25
First quality, other brands...\$4.25@4.75
Jobbers' Special Brands, good quality...\$4.00@4.75

Axle Grease—See Grease, Axle.

Axles—

Concord, loose collar...4½¢
Concord, solid collar...5¢
No. 1 Common...34¢
No. 1 ½ Common, New Style...4¢
No. 2, Solid Collar...4½¢
Nos. 7, 8, 11 to 14...60@105%
Nos. 15 to 18...50%
Nos. 19 to 22...70%

Bag Molders—See Molders, Bag.

Balances—

Sash—

Caldwell low list...90%

Vanderbilt...80%

Spring—

Spring Balances...50@10@60%
No. 200...20 30
Chatillon, # doz...\$0.60 70 1.50
Chatillon Straight Balances...50%
Chatillon Circular Balances...60%

Barb Wire—See Wire, Barb.

Bars—Crow—

Steel Crowbars, 10 to 40 lb...# D 2@34¢

Beams, Scale—

Scale Beams, List Jan. 12, '82...50@10%
Chatillon's No. 1...40%
Chatillon's No. 2...50@105@10@5%

Beaters—Egg—

New Dover (Dover Stamping Co.)...# doz. 75¢ # gr. \$7.50
Dover, Ex. Family size...# doz. 75¢ # gr. \$7.50
New Dover...# doz. 75¢ # gr. \$7.50
Dover (Standard Co.), No. 10...# gr. \$5.50; No. 5, \$6.00; No. 15, \$12.00
Dover (Tap In Pat. Imp.), No. 100...# gr. \$7.00; No. 150, # doz. \$2.00.
Lebanon...# doz. \$2.75@3.00
Spiral...# gr. \$4.25@4.50
Wonder (S. S. & Co.)...# doz. 75¢

Bellows—

Blacksmiths'...70@10@70@10@5%
Hand Bellows...50@50@10%
Molders...50@50@10%

Bells—Cow—

Wrought, Sheep and Cow...60@10@70%
Kentucky...75@10%
Western...70%
Jersey...75@10%
Texas Star...50@10%

Door—

Gong, Yankee...60@10%
Lever, R. & E. Mfg. Co.'s...60@10%
Lever and Pull, Sargent's...45@10@45@10@5%

Hand—

Hand Bells, Polished...70@10@70@10@5%
White Metal...70@70@10%
Nickel Plated...60@60@5%
Swiss...70%
Silver Chime...40@10@50%

Miscellaneous—

Farm Bells...# D 2¢
Steel Alloy Church and School...50@10%

Belting

Common Standard...75@10@75@10@5%
Extra...70@70@10%
Standard...70@10@75%

Leather—

Best Oak Tanne...60@10@60@10@10%

Bench Stops—See Stops, Bench.

Benders and Upsetters, Tire—

Brettell Tire Upsetter, \$15...50%
Green River Tire Benders and Upsetters...30%
Stoddard's Lightning Tire Upsetters...40@50%

Bicycle Goods—

John S. Long's Son's 1897 list:
Balls...50%
Chain...50%
Parts...50%
Spokes...60@10%
Lane's Cycle Hanger...33@35%
C. Rogers & Bros.:
Telescope Luggage Carriers, Aluminum Frame...50%
Springfield Duplex Gong and Surpriser Whistles...50%
Safety Sprocket Locks...50%
Combination Screw Driver and Nipple Wrench...50%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—
See Augers and Bits.

Bit Holders—See Holders.

Blind Adjusters—See Adjusters, Blind.

Blind Fasteners—See Fasteners, Blind.

Blind Staples—See Staples, Blind.

Blocks—

Common Jap'd Sheaves...75@75@5%
Eddy Steel Tackle Blocks...70%
Ford's Star Brand, Self Lubricating...70%
Hollow Steel, Ford's Pat. Star Brand...50@10%

Hartz Steel Tackle Blocks...50@10%

Lane's Pat. Adj. Perfect Safety and Junior...30%
Stowell's Novelty, Mal. Iron...50@10%
See also Machines, Hoisting.

Boards, Stove—

Market somewhat irregular.
Manufacturers quote...30@10@40%
Jobbers often sell...40@10@50%

Boils—

Carriage, Machine, &c.—

Common, list Jan. 30, '95...75@75@80%
Norway Iron, \$3.00, list Oct. 7, '84...75@10@75@10@5%

Phila. Eagle, \$3.00 list...85@15%
Bolt Ends, list Jan. 30, '95...80@80@10%
Machine, list June 12, '90...80@80@10%

Door and Shutter—

Cast Iron Barrel, Square, &c...60@10@70%
Cast Iron Shutter Bolts...60@10@60%
Ives' Patent Door, 60@10@50@10@10%
Wrought Barrel, Standard list...75@10@80%

Wrought Flush—

R. K. Sargent's list...50@10@60%
B. K. Stanley's list...60@10@60@10@5%
Sunk, Sargent's or Stanley's list...50@10@50@10@5%
Wrought Shutter, Standard list...60@10@75@70%
Wrought Square, Standard list...75@75@10%

Stove and Plow—

Plow...70@70@10%
Stove, list August 27, 1895...80%

Tire—

Common, list Feb. 28, '83...80%
American Screw Company:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...85%
Bay State, list Feb. 28, '83...80%
Franklin Moore Co.:
Norway Phila., list Oct. 16, '84...80%
Eagle Phila., list Oct. 16, '84...85%
Scipio, list Feb. 28, '83...80%
Port Chester Bolt & Nut Company:
Empire, list Feb. 28, '83...80%
Keystone Phila., list Oct. '84...85%
Norway Phila., list Oct. '84...80%

Borers, Tap—

Common and Ring...20@10@35%
Enterprise Mfg. Co.:
No. 1, \$1.50;
No. 2, \$2.00; No. 3, \$3.00 each.

Boring Machines—See Machines, Boring.

Bow Pins—See Pins, Bow.

Boxes, Letter—

Tatum's...50%

Braces—

NOTE.—Most Braces are sold at net prices.
Barber's...60@60@10%
Common Ball, American...\$1.10@1.20
Fray's Genuine Spofford's...50@10@5%
Fray's No. 70 to 120, 81 to 123, 207 to 414...50@10@5%
P. S. & W. Co., Peck's Patent...60@10@50@10@10%

Brackets—

Shelf, plain; Regular, list...75@75@10%
Sovell's list...70@85%
Bradley Shelf Brackets...80@10%

Bright Wire Goods—See Wire.

Broilers—

Wire Goods Co...75@75@10%

Buckets, Well and Fire—See Pails.

Bucks, Saw—

Hoosier...# gr. \$22.00 @ \$24.00

Bull Rings—See Rings, Bull.

Butchers' Cleavers—See Cleavers, Butchers.

Butts—Brass—

Cast Brass, Tiebout's...50%
Wrought Brass, list Sept., '96...40@40@10%

Cast Iron—

Fast Joint, Broad...60@60@10%
Fast Joint, Narrow...60@10@60@10@10%
Loose Joint...75@5@75%
Mayer's Hinges...10@5%
Parliament Butts...10@5%

Wrought Steel—

Loose Joint...List Apr. 1, 1895 75@10%
Narrow and Broad...@75@10@10%
Loose Pin...75@5@75%
Loose Pin, Ball and Steeple Tip...80@5@80@10@5%
Bronzed Wrought Narrow and Inside Blind Butts...50@10@350@10@5%

Cages, Bird—

Hendryx, Brass:
8000, 5000, 1100 series...10%
1900 series...40%
200, 300, 600 and 900 series...40@10@50%
Hendryx, Bronze:
700, 800 series...40@10@50%
Hendryx, Enamelled...40@10@50%

Calipers—See Compasses.

Calks, Toe—

Burke's One Prong, Blunt...4@4½¢
Burke's One Prong, Sharp...5@5½¢
Burke's Two Prong, Blunt...5@5½¢
Burke's Two Prong, Sharp...6@6½¢
Gautier, One Prong, Blunt...5@5½¢

Can Openers—See Openers, Can.

Cans, Milk—

Buffalo Pattern:
Concave Cover...\$1.25 \$2.00 gal.
Convex Cover...2.40 2.15 2.35
Illinois Pattern...1.80 2.00
Iowa Pattern...1.75 1.95
New York Pattern...2.25 2.45
Baltimore Pattern...2.35 2.55

Chicago S. Co. Seamless Neck...10 gal. 1

Iowa...\$1.30 \$1.50 \$1.65 each.
Sturges...1.30 1.50 1.65 each.
Elgin...1.75 1.90 each.
Chicago...1.50 1.90 2.00 each.

Cans, Oil—

Galvanized Blue Band, 1-gal...# doz. \$1.60@1.80
S. S. & Co., Galvanized Family with faucet, 3-gal...# gro. \$54; 5-gal...\$80, 10-gal...\$180.00
Glass Oil...# doz. \$1.80@1.85

Caps—Percussion—

Eley's E. B...500
Hicks & Goldmark's and Union Metallic Cartridge Co. # 1000
E. B. Grnd. Edge, Cent. Fire, 1-10's...47@50¢
E. B. Trimmed Edge, 1-10's...47@50¢
F. L. Waterproof, 1-10's...35@37¢
G. D...27@28¢
Musket, Waterproof, 1-10's...45@50¢

Primers—

Berdan Primers, \$1.00...2¢
B. L. Caps (Sturtevant Shells) \$1.00...2¢
All other primers...\$1.00@1.10

Carpet Stretchers—

See Stretchers, Carpets.

Cartridges—

NOTE.—These prices are sometimes shaded by jobbers.
B. B. Caps, Cou. Ball Swgd...\$1.90
B. B. Caps, Round Ball...\$1.12@1.18
Blank Cartridges, except 22 and 32 cal., additional 10% to above discounts.
Blank Cartridges, 22 cal. \$1.75...2¢
Blank Cartridges, 32 cal. \$3.50...2¢
Cent. Fire, Military and Sporting 15&5&2¢
Cent. Fire, Pistol and Rifle...25&5&2¢
Primed Shells and Bullets...15&5&2¢
Rim Fire Cartridges...50&5&2¢
Rim Fire, Military...15&5&2¢

Carpet Sweepers—

See Sweepers, Carpet.

Casters—

Bed Plate, etc...50@70@5%
Martin's Patent (Phoenix)...60@80@5%
Payson's Anti-Friction Furniture...70@10@5%
Payson's Anti-Friction Truck...60@10@5%
Standard Ball Bearing...60@60@10%
Tatum's Anti-Friction...80@60@10%
Tucker's Patent, low list...50@50@5%

Cattle Leaders—

See Leaders, Cattle.

Chain—

American Coll. Cask Lots:
3-16 ¼ 5-10 ¾ 7-13 ¼ 9-16
\$5.50 4-10 3-10 2-75 2-70 2-50 2-40
¾ ¾ 1 inch.
\$2.35 2-25 2-20 2-15
For less than Cask lots add 1-10c.
German Coll, list July 24, '97...60@10@105@70@5%
German Halter Chain, list July 24, '97...60@10@105@70%
Trace, Wagon and Fancy Chains, list revised April, '98...70&30@70@10%
Brest, Hitching and Rein Chains
Covert Sad. Works...70%
Covert Halter, list Jan. '95...45&2¢
Covert Heel Chain, list Jan. '95...45&2¢
Jack Chain, Iron and Brass, list July 10, '93...70@10%
Garland's Eureka Weldless Coll...75%
Garland's Eureka Weldless Halters 70@10%
Garland's Eureka Weldless Cow Ties 60%
Onelda Halter Chain...60@60@10%
Gal. Pump Chain...# D 3 ¼@4¢

Chalk—(From Jobbers.)

Carpenters', Blue...# gr. 50@52¢
Carpenters', Red...# gr. 45@47¢
Carpenters', White...# gr. 40@42¢
See also Crayons.

Chalk Lines—See Lines.

Checks, Door—

Bardsley's...40%
Eclips...60@60@10%
Norton...40@50%
Larimer...50@60%

Chisels—

Socket Framing and Firmer
S and A list...75@10@80%
Buck Bros...30%
Charles Buck...50%
Douglass...75@10@80%
L. & J. White...30@30@5%

Tanged and Miscellaneous.

Buck Bros...30%
Charles Buck...40%
Tanged Firmer...40@10@50%
L. & J. White, Tange 1...25&5%
Cold Chisels, good quality...# D 14@16¢
Cold Chisels, fair quality...# D 12¢
Cold Chisels, ordinary...# D 7@7¢

Chucks—

Bench Pat., each \$8.00.....	20%
Graham Patent.....	33%
Morse's Adjustable, each \$7.00.....	25%
Syracuse, Bal. Pat.....	30%
Skinner Patent Chucks.....	40%
Combination Lathe Chucks.....	40%
Drill Chucks.....	30%
Independent Lathe Chucks.....	40%
Improved Planer Chucks.....	20%
Universal Lathe Chucks.....	40%
Union Mfg. Co.:.....	
Combination.....	40%
Czar Drill.....	40%
Geared Scroll.....	30%
Independent.....	40%
Union Drill.....	40%
Universal.....	40%
Face Plate Jaws.....	35%

Clamps—

Adjustable Cincinnati.....	25%10%
Adjustable, Hammers.....	20%20%
Adjustable, Stearns.....	30%30%
Cabinet, Sargent's.....	45%10%
Carriage Makers', F. S. & W. Co.....	40%10%
Carriage Makers', Sargent's.....	50%10%
Cincinnati Carpenters', &c.....	25%10%
Joiners' Clamps, Tatum's.....	25%10%
R. I. Tool Co.'s Wrought Iron.....	25%
Saw Clamps, see Fuses, Saw Fiers.....	40%
Stearns Malleable, with Wrought Iron.....	75%75%
Screw.....	25%10%
Stearns Steel.....	25%10%
Tatum's Joiners' Adjustable.....	25%10%
Tatum's Quilt, Cabinet, &c.....	40%
Warner's.....	40%10%

Cleaners, Walk—

Star Socket, All Steel.....	doz. \$4.00 net
Star Shank, All Steel.....	doz. \$3.75 net

Cleavers, Butchers'—

Foster Bros. Flat Hds., 30% Rd. Hds., 40%.....	40%
New Haven Edge Tool Co.'s.....	40%
Nichols Bros., Flat hdl., 30%; Rd. hdl., 40%.....	35%
Fayette R. Plumb.....	35%
P. S. & W.....	35%
L. & J. White.....	25%

Clippers—

Chicago Flexible Shaft Company:	
Handy Toilet.....	doz. \$7.20
Mascotte Toilet.....	doz. \$8.40
Monitor Toilet.....	doz. \$9.00
Stewart's Patent.....	doz. \$10.00
Hotchkiss Horse Clippers.....	doz.:
No. 10, \$18; No. 30, \$15.00; No. 22, \$13.80; No. 20, \$13.20; No. 8, \$10.50.....	
Hotchkiss Toilet Clippers.....	doz.:
No. 1, \$9.00; No. 101, \$10.80; No. 201, \$10.50; No. 300, \$13.20; No. 500, \$15.....	

Clips—

Earle Axle.....	75%10%
Norway Axle.....	70%10%
Superior Axle Clips.....	70%10%

Cloth and Netting, Wire—

—See Wire, &c.

Cocks, Brass—

Hardware list (Globe, Kerosene, Lever, Bibbs, Racking, &c.).....	70%70%10%
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Coffee Mills—See Mills, Coffee.**Collars, Dog—**

Brass, Pope & Stevens' list.....	40%
Chapman Mfg. Company, new list.....	40%
Embossed, Gilt, Pope & Stevens' list.....	30%10%
Leather, Pope & Stevens' list.....	40%

Combs, Curry—

Fitch's.....	25%10%
Hotchkiss', List Nov. 20, '98.....	25%10%
Rubber, # doz. \$7.50.....	25%25%10%
New York Stamping Co., List Sept. 17, '97.....	25%10%
New Centaur Spring Curry Comb:.....	
With Wire Handl.....	doz. \$1.20
With Strap Handl.....	doz. \$1.60

Compasses, Dividers, &c.

Ordinary Goods.....	70%10%
Bemis & Call Co.'s:	
Dividers.....	65%
Calipers, Call's Patent Inside.....	55%
Calipers, Double.....	70%
Calipers, Inside or Outside.....	70%
Calipers, Wing.....	60%
Compasses.....	50%5%
J. Stevens A. & T. Co.....	25%10%

Coolers, Water—

S. S. & Co.: 2-gal., \$2.70; 3-gal., \$3.30; 4-gal., \$3.60; 6-gal., \$4.75; 8-gal., \$7.20; 11-gal., \$11; 14-gal., \$14 each 60%	
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Coopers' Tools—

—See Tools, Coopers'.

Cord—Sash—

Braided, Drab and Fancy, # D 55#.....	30%
Braided, White, # D.....	14%30%
Cable Laid Italian.....	# D A, 18#; B, 16#
Common India.....	# D 8#&9#
Patent Russia.....	# D 12#&13#
Cable Laid Russia.....	# D 13#&14#
India Hemp, Braided.....	# D 9#&10#
Patent India.....	# D 10#&11#
Masachusetts, White.....	17#
Eddystone Braided Cotton.....	# D 18#
Harmony Cable Laid Italian.....	# D 18#
Oranwan Mills:	
Crown, Solid Braided White.....	# D 18#
Braided, Giant, White.....	# D 16#
Peerless:	
Cable Laid Italian.....	16#
Cable Laid Russian.....	13#
Braided India.....	18#
Samson:	
Braided, Drab Cotton.....	# D 33#&35#
Braided, Italian Hemp.....	# D 31#&33#
Braided, Linnen.....	# D 53#&54#
Braided, White Cotton.....	# D 27#&30#
Silver Lake:	
A quality, Drab, 40#.....	15%7%
A quality, White, 55#.....	15%7%
B quality, Drab, 55#.....	15%7%
B quality, White, 80#.....	15%7%
Italian Hemp, 40#.....	15%7%
Lines, 57#&60#.....	15%7%

Wire, Picture—

Braided or Twisted.....	55%55%25%
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Corn Knives and Cutters

—See Knives, Corn.

Crackers, Nut—

Acme, Japanned, # gr. \$30.....	40%
Acme, Nickel Plated, # gr. \$30.....	20%
Turner & Seymour Mfg. Co.....	50%

Cradles—

Grain.....	55%
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Crayons—

White Round Crayons, # gross.....	5@6@
Cases, 100 gr., \$4.50@5.00, at factory.....	
D. M. Stewart Mfg. Co.:.....	
Metal Workers', # gr. \$2.50.....	20%25%
Railroad, # gr. \$2.00.....	20%25%
Rolling Mill, # gr. \$2.50.....	20%25%
Soapstone Pencils, # gr. \$1.50.....	20%25%
See also Chalk.....	

Creamery Pails—See Pails.**Crooks, Shepherds'—**

Fort Madison, Heavy.....	doz. \$7.00
Fort Madison, Light.....	doz. \$6.50

Crow Bars—See Bars, Crow.**Cultivators—**

Victor Garden.....	doz. \$10.00
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Curry Combs—

—See Combs, Curry.

Cutters—Meat—

American.....	80%
Nos.....	1 2 3 4 5 6
Each.....	\$5 \$7 \$10 \$25 \$50 \$80
Connecticut, No. 0, \$2.00; No. 1, \$3.50; No. 2, \$5.00; No. 3, \$7.00; No. 4, \$10.00; No. 5, \$15.00; No. 6, \$25.00; No. 7, \$50.00; No. 8, \$80.00.....	
Enterprise.....	35%25%7%
Nos.....	10 12 22 32 42
Each.....	\$3 \$3.50 \$4 \$6 \$15
Dixon's, # doz.....	\$39%4%
Nos.....	1 2 3 4
Each.....	\$14.00 \$17.00 \$19.00 \$20.00
Hale's, # doz.....	\$15 70%70%5%
Nos.....	12 13
Each.....	\$27.00 \$33.00 \$45.00
Home No. 1, # doz.....	\$36.00 \$40.00 \$45.00
Little Giant, # doz.....	\$50%10%
Nos.....	305 310 312 320 322
Each.....	\$35.00 \$48.00 \$44.00 \$72.00 \$68.00
Miles' Challenge, # doz.....	45%45%10%
Nos.....	1 2 3
Each.....	\$22.00 \$30.00 \$40.00
New Triumph No. 505, # doz.....	\$24.00
Woodruff's, # doz.....	\$39%5%
Nos.....	100 150
Each.....	\$15.00 \$18.00
Chadborn's Smoked Beef Cutter, # doz.....	\$60.00
Enterprise Beef Shavers.....	25%30%

Slaw and Kraut—

Tucker & Dorsey Mfg. Co.:.....	
Kraut Cutters.....	50%50%10%
Slaw Cutters, 1 Knife, # gr.....	\$15@18
Slaw Cutters, 2 Knife, # gr.....	\$20@27

Tobacco—

All Iron.....	doz. \$4.00
National, # doz.....	\$21.00 30%5%
Sargent's, # doz.....	\$24.00 60%60%10%

Washer—

Appleton's, # doz.....	\$16.00 60%10%60%10%10%
Bonney's, # doz.....	\$4.25
Cincinnati.....	25%10%
Tatum's.....	25%10%

Diggers, Post Hole, &c.—

Gem, Improved.....	# doz. \$8.50@9.00
Samson, # doz.....	\$36.00 25%10%25%10%5%
Vaughan's Post Hole Auger, # doz.....	5.25@5.75

Dividers—See Compasses.**Dog Collars—See Collars, Dog.****Door Checks—**

—See Checks, Door.

Door Springs—

—See Springs, Door.

Drawers, Money—

Tucker's Pat. Alarm Tl No. 1, # doz.....	\$18; No. 2, \$12; No. 3, \$11; No. 4, \$12.
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Drawing Knives—

—See Knives, Drawing.

Drills and Drill Stocks—

Bench Drills, Stearns.....	50%50%10%
Blacksmiths' Self-feeding, each \$7.50, 20%.....	
Breast, Millers Falls, each \$3.00.....	25%
Breast, P. S. & W.....	40%10%
Goodell Automatic Drills.....	40%50%40%10%
Ratchet, Blignall & Keeler.....	30%5%
Ratchet, Curtis & Curtis.....	25%
Ratchet, Ingersoll's.....	40%
Ratchet, Parker's.....	20%25%
Ratchet, Weston's.....	20%25%
Ratchet, Whitney's.....	20%25%
Whitney's Hand Drill, No. 1, \$10.00; Adjustable, No. 10, \$12.00.....	33%

Twist Drills—

Standard List.....	60%10%50%60%10%10%
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Drill Bits or Bit Stock

—Drills—See Augers and Bits.

Drill Chucks—See Chucks.**Dripping Pans—**

—See Pans, Dripping.

Drivers, Screw—

Balsey's Screw Holder and Driver, # doz.....	24-inch, \$6; 4-in., \$7.50 6-in., \$9. 40%
Buck Bros.....	25%10%5%
Buck Bros' Screw Driver Bits.....	27%5%
Champion.....	40%10%
Disston's.....	50%50%10%
Douglas Mfg. Co.....	20%20%10%
Electric Spiral.....	50%10%10%5%
Elrich's Socket.....	40%10%
Fray's Hol. H'dle Sets, No. 3, \$12.00 50%	
Gay & Parsons' Ratchet.....	35%
Goodell's Automatic.....	50%10%10%50%10%10%5%
Hercules, W. & B.....	70%75%
Howard Allard Spiral.....	50%10%10%5%
Jones Reversible.....	50%
Knapp & Cowles:	
Nos. 1 and 2.....	70%10%
No. 3.....	60%10%
Nos. 4 and 60, Acme and Ideal.....	60%10%
Mayhew's Black Handle.....	50%
Mayhew's Monarch.....	45%10%
New England Specialty Co.....	50%10%
New York, Manhattan and Handy.....	20%
Sargent & Co's:	
Nos. 1, 20, 40 and 60.50%10%50%10%5%	
Nos. 50 and 55.....	50%10%10%60%5%
Screw Driver Bits.....	doz. 50%75%
Stanley's R. & L. Co.....	70%10%
No. 64, Varnished Handles.....	70%10%
No. 86.....	75%10%
Syracuse Screw Driver Bits.....	40%

Egg Beaters—See Beaters, Egg.**Egg Poachers—**

—See Poachers, Egg.

Electric Bell Sets—

—See Bells, Electric.

Emery—No. 4 to No. 54 to Flour, CF

Kegs, # doz.....	46 gr. 1.80 gr. F.F.F.
4 Kegs, # doz.....	5 8 8
4 Kegs, # doz.....	5 8 8
10-cans, 10.....	5 8 8
In case.....	6 8 8
10-cans, less than 10.....	10 8 8

Enameled and Tinned Ware—See Ware, Hollow.**Escutcheon Pins—**

—See Pins, Escutcheon.

Extractors, Lemon Juice—

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's.....	50%10%
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Faucets—

B. & L. B. Co.:.....	
West's Lock, Open and Shut Key.....	50%10%
Burnside's Red Cedar.....	50%
Burnside's Red Cedar, bbl. lots.....	50%10%
Cork Lined.....	70%50%10%
Metallic Key, Leather Lined.....	60%10%
John Sommer's Peerless Tin Key.....	50%
John Sommer's Boss Tin Key.....	50%
John Sommer's No Brand Metal Key.....	60%
John Sommer's W. P. Metal Key.....	40%
John Sommer's Diamond Lock.....	40%
John Sommer's I. X. L. Cork Lined.....	50%
John Sommer's Reliable Cork Lined.....	60%
John Sommer's Common Cork Lined.....	60%
John Sommer's Chicago Cork Lined.....	60%
John Sommer's O. K. Cork Lined.....	60%
John Sommer's Perfection Cedar.....	40%
John Sommer's Cedar (in bbls.).....	50%10%
Star.....	60%60%5%
Star, Metal Plug, new list.....	40%40%5%
Stearns' Wood, No. 200, Wood-lined Key.....	50%10%
Stearns' Matchless, Wood, No. 300.....	60%
Stearns' Gem, Wood, No. 400.....	60%
Lockport, Metal Plug, reduced list.....	60%5%
Self Measuring:	
Enterprise, # doz.....	\$36.00 33%4%
Lane's, # doz.....	\$36.00 33%4%
National Measuring, # doz.....	\$36.00 33%4%

Felloe Plates—

—See Plates, Felloe.

Fifth Wheels—

Brewster.....	75%10%80%
Derby and Cincinnati.....	70%10%75%

Files—Domestic—

Best Brands.....	60%10%10%70%10%10%
Fair Brands.....	75%50%80%
Second quality.....	80%80%10%

Imported—

Stubs' Tapers.....	Stubs' list, July 24, '97. 80%33%4%
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Fixtures, Grindstone—

Stowell's.....	55%10%
P. S. & W.....	50%10%10%
Reading Hardware.....	30%20%10%
Sargent's Patent.....	70%10%70%10%10%

Fluting Machines—

—See Machines, Fluting.

Fodder Squeezers—

—See Squeezers, Fodder.

Forks—

Hay, 2 tine.....	70%7%4%2%
Hay, 3 tine.....	70%10%2%
Manure, 4 tine.....	70%15%10%2%
Manure, 5 and 6 tine.....	70%20%
Soiling.....	75%5%2%4%2%
Victor, Hay.....	75%15%
Victor, Manure.....	75%5%2%
Victor, Header.....	75%5%
Champion, Hay.....	75%2%4%2%
Champion, Manure.....	75%15%
Columbia, Hay.....	75%15%
Columbia, Manure.....	75%15%
Columbia, Spading.....	60%5%3%4%2%
Hawkeye Wood Barley 4 tine # doz.....	\$5.00; 6 tine, \$5.50.
Plated see Spoons.....	

Frames—**Saw—**

Red, Polished and Varnished.....	# doz. \$1.00@1.10
White.....	# gro. \$3.25@3.50

Engineers' and B. S. Hand..... 60¢
 Michlin's Hammer..... 80¢
 A. E. & Bell Face Nail..... 40¢19¢
 Other Nail Hammer..... 50¢
 Sargent's C. S. New List..... 45¢50¢

Heavy Hammers and Sledges—
 2 5 and under..... 75¢ 45¢
 3 to 5..... 75¢ 36¢ 80¢20¢
 Over 5..... 75¢ 30¢ 85¢10¢
 Wilkinson's Smiths..... 90¢10¢ 75¢

Handcuffs and Leg Irons
 See Police Goods.

Handles—
Cross-Cut Saw Handles—
 Atkins..... 40¢
 Champion..... 45¢50¢10¢
 Ely's Perfect..... 75¢ doz. \$3.00

Iron, Wrought or Cast—
 Barn Door, 75¢ doz. \$1.40..... 20¢
 Bronse Iron Drop Latches..... 75¢ doz. 60¢
 Chest, Sargent's list..... 50¢10¢50¢10¢10¢
 Door or Thumb.....
 No..... 1 2 3 4
 75¢ doz..... \$0.90 1.00 1.05 1.35 1.50
 60¢10¢10¢70¢
 Jay's Store Door Handles—Nuts..... \$1.62;
 Plate, \$1.10; no plate, 80.38..... 10¢
 Raggin's Latches..... 75¢ doz. 85¢30¢

Wood—
 Auger, assorted..... 75¢ gr. \$2.25 \$3.50
 Auger, large..... 75¢ gr. \$3.00 \$3.25
 File, assorted..... 75¢ gr. \$1.25 \$1.40
 Brad Awl..... 75¢ gr. \$1.75 \$2.00
 Apple Firmer Chisel, ass'd 75¢ gr. \$2.50 \$2.50
 Apple Firmer Chisel, large 75¢ gr. \$3.75 \$4.00
 Hickory Firmer Chisel, ass'd 75¢ gr. \$2.25 \$2.50
 Hickory Firmer Chisel, large 75¢ gr. \$3.50 \$3.75
 Hickory Firmer Chisel, ass'd 75¢ gr. \$2.50 \$2.75
 Socket Firmer Chisel, ass'd 75¢ gr. \$1.25 \$1.50
 Socket Framing Chisel, ass'd 75¢ gr. \$2.50 \$2.75
 Chisel, Flat Head (Stearns)..... 25¢
 Hammer, Hatchet, Axe, &c..... 60¢10¢
 Hoe, Rake and Fork..... 60¢10¢ \$0.10 10¢10¢
 Shovel and Spade, Wood HDH 60¢10¢ 60¢10¢
 Pat. Auger, Douglas.....
 75¢ set No. 1, \$1; 75¢ set No. 2, \$1.40
 Pat. Auger, Swann, 75¢ set No. 3, \$1;
 No. 4, \$1.25..... 25¢10¢
 Saw and Plane..... 40¢10¢50¢

Hangers—
 Bigelow & Dows Co.:
 Paragon, No. 1, \$3.50; No. 2, \$4.50;
 Chicago Spring Butt Co.:
 Friction..... 85¢35¢10¢
 Oscillating..... 85¢35¢10¢
 Big Twin..... 85¢35¢10¢
 Chisholm & Moore Mfg. Co.:
 Advance..... 60¢10¢
 Cleveland..... 60¢10¢
 Baggage Car Door..... 50¢
 Elevator..... 40¢
 Railroad..... 55¢
 Cronk Hanger Co.:
 Roller Bearing..... 70¢
 Steel Covered..... 60¢10¢
 Lane Bros.:
 Parlor, Standard..... 40¢10¢
 Barn Door, Standard..... 60¢10¢
 Covered..... 60¢10¢
 Cycle, 75¢ doz. \$12.00..... 85¢45¢
 Parlor Door, New Model..... 40¢25¢
 Lawrence Bros.:
 Crown..... 60¢10¢
 New York..... 60¢10¢60¢10¢55¢
 Sterling..... 60¢10¢
 McKeon Bros.:
 No. 2, Standard, \$18..... 60¢10¢
 No. 1, Special, \$18..... 60¢10¢
 Payson Mfg. Co.:
 Pendulum, No. 589..... \$2.49
 E. C. Stearns & Co.:
 Davis..... 50¢50¢25¢
 Gen'l Parlor Bldg. Door..... 50¢10¢
 Challenge..... 50¢50¢25¢
 Steel Single Track Parlor, \$6..... 50¢
 Royal Parlor Door..... 50¢
 Warner's Pat..... 30¢10¢10¢
 Warner's Imp'..... 40¢10¢
 C. H. Mfg. and Foundry Co.:
 Badger..... 60¢10¢
 Baggage Car Door..... 85¢45¢
 Climax Anti-Friction..... 55¢45¢
 Elevator..... 40¢
 Interstate..... 60¢10¢
 Steel..... 60¢10¢
 Matchless..... 60¢10¢
 Nansen..... 60¢10¢
 Parlor Door..... 60¢10¢
 Railroad..... 55¢45¢
 Street Car Door..... 60¢10¢
 Steel, Nos. 390, 400, 500..... 45¢15¢
 Wild West..... 50¢25¢
 Zenith for Wood Track..... 55¢45¢
 Taylor & Boggis Foundry Co.:
 Kidder's..... 60¢50¢10¢
 Terry Mfg. Co.:
 Ideal..... 70¢
 Steel..... 70¢
 Modern, Covered..... 70¢
 Safety..... 70¢
 Shield..... 70¢
 Solid..... 70¢
 Wrought..... 70¢
 Taylor & Boggis & Williams Hdy Co.:
 American Trackless..... 85¢10¢
 Wilcox Mfg. Co.:
 Aurora Steel Endless..... 60¢
 Bike Roller Bearing..... 60¢10¢10¢
 Bike Steel Endless..... 60¢10¢10¢
 C. L. Roller Bearing..... 60¢10¢10¢
 Cycle Ball Bearing..... 60¢10¢
 Dye Steel..... 60¢10¢
 Economical Single Track..... 50¢10¢55¢
 L. T. Roller Bearing..... 70¢
 New Era..... 50¢10¢
 New Richmond..... 85¢
 No. K. Roller Bearing..... 70¢
 Prindle Improved..... 60¢10¢
 Richards' Improved..... 60¢10¢
 Richards' Single Track..... 60¢10¢
 Wilcox Dwarf Roller Bearing..... 40¢10¢
 Wilcox-Ives..... 60¢10¢
 Wilcox Tandem Roller Bearing..... 60¢10¢
 Wilcox Trolley Ball Bearing..... 40¢10¢
 Wilcox Trolley Roller Bearing..... 50¢
 Wilcox Trolley Roller Bearing..... 40¢10¢
 Fire..... 40¢10¢
 Wood Track..... 40¢10¢

Harness Menders—See *Menders.*
Harness Snaps—See *Snaps.*
Hasps—
McKinney's Perfect Hasp, $\frac{7}{8}$ doz. \$1.10
Wrought Hasps, Staples, &c.—See
Wrought Goods.
Hatchets—
Blood's, Hunt's, Plumb's, Underhill's,
etc. 40¢12¢40¢50¢5¢
Cheaper Brands 50¢10¢80¢

Hay and Straw Knives—
See *Knives.*
Hinges—
Blind Hinges—
Clark Mfg. Co.:
No. 1 Blind Hinge, Old Pattern,
"Special" 80¢10¢5¢
No. 1 Blind Hinge, "Diamond" (with
tip) 80¢10¢5¢
No. 1 Blind Hinge "Cottage" (with
tip) 80¢10¢5¢
No. 1, 2, 5 Blind Hinges, regular
75¢ Old Pattern 80¢10¢
Nos. 1, 3, 5 Blind Hinges, "Victor"
(with double tip) 80¢10¢
No. 50 Blind Hinge, both "Noiseless"
and "Empire" 80¢
No. 40—50—65 Blind 80¢
Lull & Porter Old Style Shutter 80¢10¢
Dixie, L. & P. Shutter 80¢10¢
Buffalo Reversible Shutter 80¢10¢
Mortise Gravity Blind 50¢
Buffer 50¢10¢10¢65¢
Parker 75¢10¢75¢10¢
North's Automatic Blind Pictures, No.
2, for Wood, \$9.00; No. 3, for Brick,
\$11.50 10¢
Reading's Gravity 75¢10¢
Sargent's, Nos. 1, 3, 5, 11, 18, 75¢10¢
Wrightsville Hardware Co.:
Acme, Lull & Porter 80¢10¢
Buffalo Gravity Locking, Nos. 1, 3
and 5 80¢10¢5¢
Champion Gravity Locking, No. 75
1888, Old Pat'n, Nos. 1, 3 & 5, 80¢10¢
Tip Pattern, Nos. 1, 3 and 5, 80¢10¢5¢
Double Locking, Nos. 20 and 25 75¢
Empire, Nos. 101 and 103 75¢
Niagara Gravity Locking, Nos. 1, 3
and 5 80¢10¢
Noiseless, Nos. 90, 95 and 95 80¢
S. Lull & Porter 80¢10¢5¢
Pioneer, No. 060, 45 and 54 75¢8¢
Steamboat Gravity Locking, No. 10
80¢10¢5¢
Stanley's Steel Gravity Blind Hinge
 $\frac{7}{8}$ doz. sets \$1.30 40¢10¢

Gate Hinges—
Clark Mfg. Co.'s Nos. 1 and 2, 70¢10¢5¢
Clark Mfg. Co.'s No. 8 70¢
N. E. $\frac{7}{8}$ doz. \$7.50 60¢10¢80¢10¢5¢
N. E. Reversible, $\frac{7}{8}$ doz. \$5.60
60¢10¢60¢10¢5¢
N. Y. State, $\frac{7}{8}$ doz. \$4.90
60¢10¢60¢10¢5¢
Shepard's, Nos. 1, 2, 3 60¢10¢10¢5¢
Western, $\frac{7}{8}$ doz. \$4.30, 60¢10¢60¢10¢5¢

Spring Hinges—
J. Bardaley:
Bardaley's Patent Checking 15¢
Bommer Bros.:
Bommer's 40¢
Chicago Spring Butt Co.:
Chicago 30¢
Garden City Engine House 80¢
Keene's Saloon Door 30¢
Payson Mfg. Co.:
Oblique, Dbl. Acting 50¢50¢5¢
E. C. Stearns & Co.:
Nos. 45 and 61 70¢
Stover Mfg. Co.:
Ideal, No. 16, Detachable, $\frac{7}{8}$ gr.
..... \$12.50
Ideal, No. 4 $\frac{7}{8}$ gr. \$9.00
New Idea No. 1 $\frac{7}{8}$ gr. \$9.00
New Idea, Double Acting 45¢
Van Wagoner & Williams Hdw. Co.:
Acme 80¢5¢
American 30¢
Columbia, No. 14 $\frac{7}{8}$ gr. \$8.00
Columbia, No. 18 $\frac{7}{8}$ gr. \$34.00
Crown 30¢
Gentry 30¢
Knob $\frac{7}{8}$ gr. \$9.00
Oxford 30¢

Wrought Iron Hinges—
Strap and T Hinges, &c., list Mar. 15, 1893
Light Strap Hinges 75, 10¢5¢
Heavy Strap Hinges 80¢10¢
Light T Hinges 70¢
Heavy T Hinges 75¢5¢
Extra Heavy T Hinges 80¢
Plate Hinges,
Providence 14 to 36 in. $\frac{7}{8}$ D 5
Rolled Blind Hinges, Nos. 32 and 34
50¢10¢50¢10¢5¢
Rolled Plate 70¢10¢70¢10¢5¢
Screw Hook 8 to 12 in. $\frac{7}{8}$ D 3
and Strap 22 to 36 in. $\frac{7}{8}$ D 14

Hoes—
Erie—
D. & H. Scovill 20¢30¢
Scovill and Oval Pattern 20¢30¢10¢
Gr. Co. 75¢5¢75¢10¢

Handled—
Field and Garden 80¢3¢
Ladies', Boys', Toy and Union, 80¢5¢2¢
Street and Mortar 75¢25¢3¢
Cotton 80¢10¢
Flamingo 80¢10¢
Weeding 75¢5¢10¢

Ft. Madison Crucible Garden Hoe 75¢ doz.
 Ft. Madison Crescent Cultivator Hoe, 50¢ per doz.
 Ft. Madison Mattock Hoe, 37¢ doz.
 Ft. Madison Sprouting Hoe, 50¢ doz.
 Ft. Madison Dixie Tobacco Hoe, 80¢ doz.
 Warren Hoe, 60¢ doz.

Hog Rings and Ringers—
 See *Rings and Ringers*.

Hoisting Apparatus—
 See *Machines, Hoisting*.

Hollow Ware—
 See *Ware, Hollow*.

Holders—Bag—
 Sensible Bag and Twine, 50¢

Bit—
 Angular, 1/2 doz. \$24.00. 45¢ doz.
 Barber's, 1/2 doz. \$15.00. 45¢ doz.

File and Tool—
 Nicholson File Holders and File Handles, 38¢ doz.

Hooks—
Cast Iron—
 Bird Cage, Reading, 60¢ doz.
 Bird Cage, Sargent's List, 70¢ doz.
 Clothes Line, Sargent's List, 60¢ doz.
 Ceiling, Sargent's List, 60¢ doz.
 Clothes Line, Stowell's, 70¢ doz.
 Clothes Line, Reading List, 65¢ doz.
 Coat and Hat, Stowell's, 70¢ doz.
 Coat and Hat, Reading, 60¢ doz.
 Coat and Hat, Sargent's List, 60¢ doz.
 Coat and Hat, Wrightsville list, 70¢ doz.
 Harness, Reading List, 70¢ doz.

Wire—
 Atlas, Coat and Hat, 50¢ doz.
 Belt, 80¢ doz.
 Buffalo Belt Fasteners, 40¢ doz.
 Wire Coat and Hat, 60¢ doz.
 Acme, 60¢ doz.
 B. B., 75¢ doz.
 Gem, 70¢ doz.
 Bright Wire Goods—See *Wires*.

Wrought Iron—
 Cotton, 1/2 doz. \$1.9
 Picture, T. & S. Mfg. Co., 75¢ doz.
 Tassel, T. & S. Mfg. Co., 50¢ doz.
 Wrought Staples, Hooks, &c., See *Wrought Goods*.

Miscellaneous—
 Bush, Light, 1/2 doz. \$5.00; Medium, \$5.50; Heavy, \$6.00.
 Covert's Self Locking Gate and Door Hook, 4 in. 1/2 doz. \$13.00; 6 in. \$17.20. 60¢ doz.
 Crown Picture, 60¢ doz.
 Fish Hooks, American, 60¢ doz.
 Grass, No. 2, \$1.65; No. 5, \$1.80; No. 10, \$2.00.
 Potato and Manure, 75¢ doz.
 Hooks and Eyes—Brass, 70¢ doz.
 Hooks and Eyes—Malleable Iron, 75¢ doz.
 Whiffletree, 40¢ doz.
 Bench Hooks—See *Bench Stops*.
 Corn Hooks—See *Knives, Corn*.

Horse Nails—See Nails, Horse

Horseshoes—
 See *Shoes, Horse*.

Hose, Rubber—
 Garden Hose, 1/4-inch:
 Competition, 1/2 ft. 40¢ doz.
 3-ply Standard, 1/2 ft. 40¢ doz.
 4-ply Standard, 1/2 ft. 60¢ doz.
 3-ply extra, 1/2 ft. 60¢ doz.
 4-ply extra, 1/2 ft. 75¢ doz.
 High Grade, 1/2 ft. 80¢ doz.
 Cotton Garden, 1/4 in., coupled, 1/2 ft. 75¢ doz.
 Fair quality, 1/2 ft. 75¢ doz.
 Good quality, 1/2 ft. 80¢ doz.

Irons—
Sad—
 From 4 to 10, 20¢ doz.
 B. B. Sad Irons, 20¢ doz.
 Chinese Laundry, 20¢ doz.
 Chinese Sad, 20¢ doz.
 Crown Improved, Pol., 20¢ doz.
 Troy Pol. Irons, 20¢ doz.
 Mrs. Potts', per set: 20¢ doz.
 No. 50 55 60 65
 50¢ doz. 55¢ doz. 60¢ doz. 65¢ doz.
 New England Pressing, 20¢ doz.
 Sensible Sad Irons, Pol., 20¢ doz.
 Nickel, 20¢ doz.

Soldering—
 Soldering Coppers, 1/2 doz. 17¢ doz.
 Covert Mfg. Co. Adjustable, list Jan. 75, 45¢ doz.

Pinking—
 Pinking Irons, 55¢ doz.

Jack Screws—See Screws.

Jacks, Wagon—

Daisy, $\$$ doz. \$12.00..... 70 $\frac{1}{2}$
Lockport..... 40 $\frac{1}{2}$ 40 $\frac{1}{2}$ 10 $\frac{1}{2}$
Victor, $\$$ doz. \$20.00..... 60 $\frac{1}{2}$ 20 $\frac{1}{2}$
Lane's Steel..... 80 $\frac{1}{2}$

Kettles—

Brass, Spun, Plain, list Jan. 1, 91..... 15 $\frac{1}{2}$ 15 $\frac{1}{2}$
Enameled and Tea—See Ware, Hollow.

Knife Sharpeners—
See *Sharpeners, Knife.*

Knives—
Butcher, Shoe, &c.—

Dick's Butcher Knives..... 40 $\frac{1}{2}$
Foster Bros.' Butcher, &c..... 40 $\frac{1}{2}$
Nichols' Butcher Knives..... 80 $\frac{1}{2}$
Table and Pocket Cutlery and John Wilson's Butcher Knives—Net prices.
Hay and Straw—See *Hay Knives.*

Corn—

Ft. Madison Cut-Easy, $\$$ doz..... \$2.00

Drawing—

Standard list..... 75 $\frac{1}{2}$ 10 $\frac{1}{2}$ 20 $\frac{1}{2}$
Adjustable Handle..... 75 $\frac{1}{2}$ 35 $\frac{1}{2}$ 4 $\frac{1}{2}$
Bradley's..... 80 $\frac{1}{2}$
Douglass..... 75 $\frac{1}{2}$ 75 $\frac{1}{2}$ 10 $\frac{1}{2}$
Watrous..... 80 $\frac{1}{2}$ 10 $\frac{1}{2}$ 20 $\frac{1}{2}$
L. & L. J. White..... 20 $\frac{1}{2}$ 5 $\frac{1}{2}$ 25 $\frac{1}{2}$
Cautele's Folding..... 60 $\frac{1}{2}$ 50 $\frac{1}{2}$ 25 $\frac{1}{2}$

Hay and Straw—

Blizzard..... \$5.50 6 $\frac{1}{2}$ 00
Lightning, from Jobbers..... \$5.00 6 $\frac{1}{2}$ 00

Mincing—

Buffalo Adjustable, $\$$ doz. \$8.00..... 40 $\frac{1}{2}$
Knapp & Cowles..... 80 $\frac{1}{2}$
Smith's, $\$$ doz. Single, \$3; Double, \$3..... 45 $\frac{1}{2}$ 50 $\frac{1}{2}$
Sensibla, Nos. 10, 20, 40 and 60..... 40 $\frac{1}{2}$

Miscellaneous—

Farriers..... $\$$ doz. \$2.00 6 $\frac{1}{2}$ 00

Knobs—

Base, $\frac{3}{4}$ -in., Birch, Rubber tip, $\$$ gro..... \$1.25 1 $\frac{1}{2}$ 40
Bardley's Wood Door, Shutter, &c..... 15 $\frac{1}{2}$
Carriage, Jap., $\$$ gr. 80..... 60 $\frac{1}{2}$ 10 $\frac{1}{2}$
Door, Mineral..... $\$$ doz. 60 60 60
Door, For. Jap'd..... $\$$ doz. 65 60 70
Door, For. Nickel..... $\$$ doz. \$1.70 1 $\frac{1}{2}$ 80
Drawer, Porcelain..... 60 10 60 10 10 10
Picture, Sargent's..... 75 10 10
Shutter, Porcelain..... 70 70 10 10
Yale & Towne Wood, list Dec., '88..... 85 40 $\frac{1}{2}$

Ladles— Melting—

P. S. & W..... 85 10 40 $\frac{1}{2}$
Reading..... 50 10 10 $\frac{1}{2}$
Sargent's..... 60 50 10 $\frac{1}{2}$

Lanterns— Tubular—

$\$$ doz.....
Regular Tubular..... \$7.00..... 40 $\frac{1}{2}$ 5 $\frac{1}{2}$ 40 $\frac{1}{2}$
Side Lift Tubular..... \$7.50..... 10 5 $\frac{1}{2}$
Square Lift Tubular..... \$7.50..... 10 5 $\frac{1}{2}$

Bull's Eye Polce—

2 $\frac{1}{2}$ -inch flash light..... $\$$ doz. \$4.00
3-inch flash light..... $\$$ doz. \$4.50
2 $\frac{1}{2}$ -inch regular..... $\$$ doz. \$3.50
3-inch regular..... $\$$ doz. \$3.50

Lawn Mowers—
See *Mowers, Lawn.*

Leaders, Cattle—

Peck, Stow & W. Co..... 65 $\frac{1}{2}$
Sargent's..... 70 10 70 10 10 10

Lemon Squeezers—
See *Squeezers, Lemon.*

Lifters, Transom—

Excelsior..... 60 60 10 $\frac{1}{2}$
Payson's.....
Solid Grip Nos. 808 and 804, $\$$ 100..... 11.00
Other sizes..... 70 10 $\frac{1}{2}$
Shaw's..... 60 60 10 $\frac{1}{2}$

Lines—

Cesawaw Mills:
Crown Solid Braided Chalk..... 83 $\frac{1}{2}$
Mason's, No. 0 to No. 5..... 83 $\frac{1}{2}$
Silver Lake Braided Chalk, No. 0, \$6.00;
No. 1, \$6.50; No. 2, \$7.00; No. 3, \$7.50
 $\$$ gr..... 80 $\frac{1}{2}$
Wire Clothes, Nos..... 18 19 30
100 feet..... \$2.25 2.00 1.75
75 feet..... 1.25

Locks, &c.— Cabinet—

Cabinet Locks..... 45 $\frac{1}{2}$

Door Locks, Latches, &c.—

[Net prices are very often made on these goods.]

Plate.....	88½¢
Reading.....	60¢@80¢10¢
R. & E. Mfg. Co.....	60¢@10¢70¢
Sargent & Co.....	30¢10¢60¢10¢10¢
S. B. & Co., Locks, Knobs, &c.....	40¢40¢55¢

Elevator—

Stowell's.....	89½¢
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Padlocks—

Wrought Iron, list Dec. 3, '97. 75¢10¢80¢	
Dog Collar, S. B. Co.....	40¢
E. T. Frain:	
Cast Iron, Scandinavian.....	90¢40¢
Mal. Iron, 120 line.....	90¢10¢
Mal. Iron, 110 and 125 line.....	65¢
All others.....	50¢55¢
Scandinavian.....	90¢40¢90¢40¢10¢
S. B. & Co.....	40¢

Sash, &c.—

Fitch's Patent.....	70¢10¢
Ives' Patent.....	60¢5¢2¢
Payson's Perfect.....	70¢
Payson's Signal.....	70¢10¢
Reading.....	60¢10¢10¢70¢

Lumber, Tools—

See Tools, Lumber.

Machines—**Boring—**

Without Augers.

Upright. Angular.

Boas, Carpenters'.....	\$3.50
Boas, Ship Bldrs'.....	3.75
Douglas.....	2.50
Jennings'.....	2.50
Millers' Falls.....	5.75
Snell's, Rice's Pat. 2.50	2.75

Fluting—

Crown Jewel, 6 in.....	\$2.50@2.75
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Hoisting—

Moore's Anti-Friction Differential Pulley Block.....	30¢
Moore's Hand Hoist with Lock Brake.....	20¢
Maria & Beckley (Teal Patent).....	30¢
See also Blocks.	

Washing—

Anthony Wayne, ½ doz., No. 1, \$39.00;	
No. 2, \$27.00.	
Wayne American.....	½ doz. \$27.00
Wayne Combination, No. 11, \$42; No. 12, \$48.00.	
Western Star, ½ doz., No. 2, \$24.00; No. 3, \$27.00.	

Mallets—

Hickory.....	50¢50¢10¢
Lignumvite.....	50¢50¢10¢
Tinners', Hickory and Applewood.....	½ doz. 55¢80¢
Fiber Head, Stearns'.....	25¢

Mattocks—

Standard List.....	75¢10¢
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Measures—

Peck and Half Peck, See Ware, Stand and Fiber.	
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Meat Cutters—

See Cutters, Meat.

Menders—

Centaur Harness Menders, ½ doz. \$6.00	
Jones' Horse Menders, ½ doz., ½ in., 40¢; ¾ in., 50¢; 1 in., 55¢.	
Victor Complete Horse Menders, ½ doz. \$3.50	
See also Menders.	

Milk Cans—See Cans, Milk.**Mills—Coffee—**

Box and Side, List Jan. 1, '88.	
Net prices are often made on some goods which are lower than above discounts.	
Enterprise Mfg. Co., list Jan. 17, '93. 30¢	
National, list Jan. 1, '94. 30¢	
Parker's Columbia and Victor.....	60¢10¢
Parker's Upright.....	30¢10¢40¢
Swift, Lane Bros.....	39½¢

Mincing Knives—

See Knives, Mincing.

Molasses Gates—

See Gates, Molasses.

Money Drawers—

See Drawers, Money.

Mowers, Lawn—

Net prices are very frequently quoted.	
16 12 14 16-inch	
Cheap.....	\$1.85 \$1.90 \$1.95 \$2.00
Medium.....	2.50 2.75 3.00 3.25
High Grade.....	3.50 3.75 4.00 4.25
Pennsylvania and Continental.....	90¢10¢10¢

Philadelphia:

All Styles except A and E.....	70¢10¢
Style A, all Steel.....	60¢10¢
Style E, Low Wheel.....	60¢10¢
Style E, High Wheel.....	70¢10¢

Muzzles—

Safety.....	½ gr. \$12.00@12.50
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Nails—

Cut and Wire. See Trade Report.	
Wire Nails and Brads, Papered. List, May 1, '92.....	87½¢10¢90¢
Hungarian, Finishing, Upholsterers', &c. See Tanks.	

Horse—

A. C.....	25¢ 23¢ 22¢ 21¢ 21¢
American.....	9½ 9¼ 9¼ 9¼ 9¼ not
Ausable.....	25¢ 26¢ 25¢ 24¢ 23¢
Capewell.....	19¢ 18¢ 17¢ 16¢ 16¢10¢5¢
C. B. K.....	25¢ 23¢ 22¢ 21¢ 21¢
Champlain.....	25¢ 26¢ 25¢ 24¢ 23¢
Clinton Fin.....	19¢ 17¢ 16¢ 15¢ 14¢30¢5¢
Maud S.....	25¢ 23¢ 22¢ 21¢ 21¢
Putnam.....	23¢ 21¢ 20¢ 19¢ 18¢
Vulcan.....	23¢ 21¢ 20¢ 19¢ 18¢

Picture—

Brass Head, Combination list.....	50¢10¢
Brass Head, Sargent's list.....	70¢10¢
Porcelain Head, Combination list.....	40¢10¢
Porcelain Head, Sargent's list.....	50¢10¢
Crown.....	50¢10¢
Niles' Patent.....	40¢

Nail Pullers—See Pullers, Nail.**Nail Sets—See Sets, Nail.****Nippers, See Pliers and Nippers.****Nut Crackers—**

See Crackers, Nut.

Nuts—List Dec. 18, 1898.

Cold Punched. Off list.	
Mfrs. or U. S. Standard.....	\$6.40
Hexagon, plain.....	6.00
Square, plain.....	6.00
Square, C. T. & R.....	6.30
Hexagon, C. T. & R.....	7.20
Hot Pressed.	
Square, Mfrs. Standard.....	6.20
Square, U. S. Standard.....	6.30
Hexagon, Mfrs. Standard.....	7.10
Hexagon, U. S. Standard.....	7.20

Oakum—

Best or Government.....	½ doz. 54¢@6¢
Navy.....	4¢@5¢
U. S. Navy.....	5¢@6¢
Plumbers' Spun Navy.....	5¢@6¢

Oil Tanks—See Tanks, Oil.**Oilers—**

Brass and Copper.....	50¢10¢60¢
Zinc and Tin.....	75¢75¢10¢
Malleable, Hammers' Improved, No. 1.....	\$3.60; No. 2, \$4; No. 3, \$4.40 ½ doz. 20¢
Malleable, Hammers' Old Pattern.....	name list
Wilmot & Hobbs Mfg. Co.....	70¢10¢75¢

Openers, Can—

French.....	½ doz. 35¢
Iron Handle.....	½ doz. 60¢75¢
Kloake, J. Rogers & Bros.....	½ doz. \$6.50
National, ½ gro.....	\$1.75@2.00
Sardine Openers.....	½ doz. \$2.00@2.10
Sprague, Iron or Wood Handles.....	½ doz. 40¢45¢
Stowell's.....	75¢10¢
Streeter's:	
Sensible, Japanned.....	½ gr. \$3.50
Sensible, Nickel.....	½ gr. \$5.50
Surprise.....	½ gr. \$2.00
New Sprague, Metallic Handle.....	½ gr. \$3.50
New Sprague, Wood Handle.....	½ gr. \$4.50

Packing—**Rubber—**

Standard, fair quality.....	70¢10¢75¢
Inferior quality.....	75¢10¢90¢
Extra.....	60¢5¢60¢10¢5¢
Jenkins' Standard, ½ doz.....	80¢25¢25¢55¢

Miscellaneous—

American Packing.....	9¢@10¢ ½ doz
Cotton Packing.....	13¢@14¢ ½ doz
Italian Packing.....	10¢@11¢ ½ doz
Jute.....	9¢@10¢ ½ doz
Russia Packing.....	12¢@13¢ ½ doz

Pails—**Creamery—**

S. S. & Co., with gauges.. No 1 \$5.25;	
No. 2, \$5.50 ½ doz.....	15¢

Galvanized—

Inch.....	10 12 14
Water, Standard.....	16.50 18.50 20.50
Water, Competi.....	14.00 16.00 18.00
Fire, ½ gro.....	19.00 22.50 25.50
Well, ½ gro.....	21.00 22.00 25.00

Pans—**Dripping—**

Large Sizes.....	½ doz. 85¢@95¢
Small sizes.....	½ doz. 4 4½¢

Fry—

Standard List.....	80¢80¢10¢
No. 0.....	1 2 3
½ doz. \$3.00 \$3.75 \$4.25 \$4.75 \$5.25	
No.....	5 6 7 8
½ doz.....	6.00 7.00 8.00 9.00
Acme Fry Pans.....	70¢10¢75¢

Roasting and Baking—

Columbian, S. S. & Co., Nos. 5, ½ doz.....	
10:10, \$11.50; 20, \$13; 30, \$15.....	60¢
Simplex No. 08, ½ doz.....	7.00; No. 09, \$8.50

Paper—**Building Paper—**

Per roll	
Rosin Sized Sheathing: 500 sq. ft.	
Light wt., 20 sq. ft. to lb.....	\$0.35@0.40
Medium wt., 12 sq. ft. to lb.....	\$0.55@0.60
Heavy wt., extra quality.....	\$0.95@1.05
Neponset Water Proof Sheathing.....	\$1.60@1.75
Medium Grades Water Proof Sheathing.....	\$0.50 to 1.25
Deafening Felt, 6, 6 and 4½ sq. ft. to lb., ½ ton.....	\$47.50

Tarred Paper.

1 ply (roll 300 sq. ft.), ½ ton.....	\$37@39
2 ply, heavy, ½ roll 100 sq. ft.....	90¢
2 ply, light, ½ roll 100 sq. ft.....	75¢
3 ply, heavy, ½ roll 100 sq. ft.....	1.20
3 ply, light, ½ roll 100 sq. ft.....	1.00

Sand and Emery—

List April 19, 1896.....	50¢10¢5¢60¢
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Parers—**Apple—**

Advance.....	½ doz. \$4.50
Baldwin.....	½ doz. \$5.00
Bonanza.....	each \$5.00
Dandy.....	each \$7.50
Eureka.....	½ doz. \$12.00
Family Bay State.....	½ doz. \$37.00@30.00
Improved Bay State.....	½ doz. \$5.50
New Lightning.....	½ doz. \$3.75
Penn.....	½ doz. \$4.00
Perfection.....	½ doz. \$4.00
Reading 72.....	½ doz. \$7.00
Reading 78.....	½ doz. \$4.50
Turn Table.....	½ doz. \$4.00
White Mountain.....	½ doz. \$5.50
Saratoga.....	½ doz. \$4.50
White Mountain.....	½ doz. \$4.50

Pencil, Soapstone—

See Crayons.

Picks and Mattocks—

Railroad or Adze Eye, 5 to 6, \$12.00; 6 to 7, \$13.00.....	75¢10¢
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Picture Nails—

See Nails, Picture.

Pinking Irons—

See Irons, Pinking.

Pins—**Bow—**

1½-inch.....	½ gro. \$4.50@5.00
2-inch.....	½ gro. \$5.00@5.50

Escutcheon—

Brass.....	70¢70¢10¢
Iron, list Nov. 11, '85.....	60¢60¢5¢

Pipe, Cast Iron Soil—

Factory Shipments.

Standard.....	75¢10¢75¢10¢5¢
Extra Heavy.....	80¢80¢5¢
Fittings.....	80¢5¢80¢10¢

Pipe, Wrought—

Factory Shipments.

List Jan. 29, '95.	
1½ and under Plain. 55¢ extra six 10's	
1½ and under Galv. 47¢ and 55¢; less	
1½ and over, Plain. 65¢ than carloads	
1½ and over, Galv. 52¢ extra six 10's	
Cold Drawn Seamless Steel Tubing.....	60¢

Planes and Plane Irons—**Wood Planes—**

Molding.....	45¢45¢5¢
Bench, First quality.....	50¢50¢10¢
Bench, Second quality.....	50¢10¢5¢60¢
Bailey's (Stanley R. & L. Co.).....	50¢10¢50¢10¢5¢

Iron Planes—

Bailey's (Stanley R. & L. Co.).....	50¢10¢10¢50¢10¢10¢10¢
Chaplin's Iron Planes.....	50¢10¢
Miscellaneous Planes (Stanley R. & L. Co.).....	25¢10¢
Sargent's.....	60¢10¢10¢70¢
Stearns' Iron Planes.....	50¢10¢50¢10¢5¢

Plane Irons—

Auburn Thistle.....	30¢10¢30¢10¢10¢
Buck Bros.....	30¢
Butcher's.....	\$5.00 to \$5.25 to 2
Ohio.....	30¢10¢40¢
Sandusky.....	50¢10¢
Stanley R. & L. Co.....	50¢10¢
L. & L. J. White.....	30¢5¢35¢

Plates—

Fello.....	½ doz. \$4.00@4.50
Self-Sealing Pie Plates (S. S. & Co.), ½ doz.....	2.00

Pliers and Nippers—

Acme Nippers.....	50¢
Button's.....	70¢10¢ 60¢10¢5¢

Cronk's Patent Pliers.....60¢**Cronk's Stubb's Pat. Pliers.....50¢10¢****Cronk's Button Pattern.....70¢****Cronk's Comb. Cutting and Gas Pliers.....40¢40¢5¢****Gas Pliers, ½ doz.....**

Best.....	7-in. 8-in. 9-in. 10-in.
Good.....	\$5.25 2.75 3.00 3.50
Heller's Farriers' Pincers and Tools.....	40¢40¢5¢
Morrill's Parallel, ½ doz.....	\$12.00 30¢5¢
P. S. & W. Cast Steel.....	50¢50¢5¢
P. S. & W. Timmers' Cutting Nippers, add 6¢.....	10¢

Utica Drop Forge & Tool Co.:

Combination Pliers.....	40¢5¢
Side Cutting Pliers.....	40¢5¢
Hall Patent Nipper.....	40¢5¢
Round and Flat Nose Pliers.....	40¢5¢
End Cutting Pliers.....	40¢5¢
Royal Blue.....	40¢5¢
Glass Pliers.....	40¢5¢
Burner Pliers.....	40¢5¢

Plumbs and Levels—

Plumbs and Levels.....	75¢10¢10¢80¢10¢
Cook's.....	

Felican, # doz. \$0.00.....15&10%
Scranton, No. 1 and 2, # doz.....10.00
Scranton, No. 3, # doz.....\$9.50

Pulleys—

Brass Screw.....70%
Hay Fork, "Anti-Friction," 5-in. solid,
#5, 70.....1.00
Hay Fork, "F," Common and Patent
Bush.....20%
Hay Fork, Stowell's Anti-Friction, 5-in.
Wheel, # doz. \$12.00.....40%
Hay Fork, Solid Eye, #4.00; Swivel,
#4.50.....50&10&50&10&50%
Hay Fork, Stowell's No. 13 & 25 # doz. \$1.75
Hay Fork, Stowell's No. 35 & 45 # doz. \$2.00
Hay Fork, Stowell's Nos. 50 & 66.....\$2.25
Hot House, Awning, &c.....60&60&10%
Japanned Clothes Line.....60&60&10%
Japanned Screw.....70&10&10%
Japanned Side.....70&10&10%
Stowell's Ceiling or End, Anti-Friction 40%
Stowell's Dumb Waiter, Anti-Friction 50%
Stowell's Electric Light.....33%
Stowell's Side, Anti-Friction.....50%
Sash (Auger Mortise):
Common Sense, 1 1/2 in., # doz. 18%
2 in., 20%
Empire.....14 in., 17% 2 in., 10%
L. C.....14 in., 15% 2 in., 17%
Ideal No. 13.....14 in., # doz. 15%
Improved.....14 in., 17% 2 in., 10%
Niagara.....14 in., 16% 2 in., 17%
No. 26, Troy.....14 in., 16% 2 in., 17%
Star.....14 in., 16% 2 in., 17%
Acme.....14 in., 18% 2 in., 19%
Tackle Blocks—See Blocks.

Pumps—

Clatren, Best Makers.....70&75%
Pitcher Spout, Best Makers.....75&10&80%
Pitcher Spout, Cheaper Goods.....80&5&80&10%
Flint & Wallings Fast Mail.....85%
Myer's Pumps, low list.....55%
Pump Leathers, all sizes.....# gr. \$0.00
Contractors' Rubber Diaphragm Non-
chokable, B. & L. Block Co.....20%

Punches—

Bemis & Call Co.'s Cast Steel Drive, 50&5%
Bemis & Call Co.'s Check.....55%
Bemis & Call Co.'s Spring.....50&5%
Bemis & Call Co.'s Springfield Socket.....65%
Niagara Hollow Punches.....45%
Niagara Solid Punches.....55%
Saddlers' or Drive, good.....# doz. 60&65%
Spring, good quality.....# doz. \$1.70&1.80
Spring, Leach's Pat.....15%
Steel Screw, B. & K. Mfg. Co.....50%
Timmers' Hollow, P. S. & W. Co.....50&2%
Timmers' Solid, P. S. & W. Co., # doz.,
\$1.44.....55%

Rail—**Barn Door, &c.—**

Barn Door, Light.....in. 1/2 3/4 3/8
100 feet.....\$1.30 1.95 2.20
B. D., for N. E. Hangers:
Small Med. Large,
100 feet.....2.00 2.50 2.50
Oran's Double Braced Steel Rail, #
foot.....3%
Lanes' O. N. T., # 100 ft.....\$2.40
Lanes' Standard, # ft. 24.....3%
McKinney's None Better.....# ft. 24%
McKinney's Standard.....# ft. 34%
Moore's Wrt. Bracket.....# ft. 40%
Sliding Door, Bronzed Wrt. Iron, # ft. 6%
Sliding Door, Iron Painted.....# ft. 2%
Sliding Door, Wrt. Brass, 14 in. # doz. 30%
Stowell's Steel Rail.....35&10%
Terry's Steel Rail.....# ft. 3%
Rakes—
Cast Steel, Asso. List.....77&2%
Malleable.....70&10%
Buffalo Lawn and Garden.....# doz. \$3.50
Fort Madison Red Head Lawn.....\$3.00
Fort Madison Blue Head Lawn.....\$2.65

Rasps, Horse—

New Nicholson Horse Rasp.....70&10%
See also Files.

Razor Straps—

See Straps, Razor.

Reels—**Clothes Line—**

Stearns'.....33%&10%

Fishing—

Hendryx Aluminum, German Silver,
Gold, Bronze, Silver, Rubber, Poplar
and Salmon, Single Action, Multi-
plying and Quadruple, all sizes.....25%
Hendryx Single Action Series, 103P
and PN, 202P and PN, 102 PR and
PN, 202 PR and PN, 304 P and
PN, 00304P and PN, 502 and 502N,
802 and 802N, 02084N, Competitor, 50%
Hendryx Multiplying and Quadruple
Series, 3004N and PN, 4N and PN,
2904N, 2904P and PN, 002904PN, 0024
and 0024N, 5009N and PN.....40&10%

Registers—

List Dec. 20, '97:
Japanned.....40&10&50%
Nickel Plate.....40&10%
Bronze Plate.....40%
Imitation Bronze.....40%

Rings and Ringers—**Bull Rings—**

Peck, Stow & W. Co.'s.....60&60&10%
Sargent's.....80&80&10%

Hog Rings and Ringers—

Blair's Rings.....# gro. \$3.40&3.50
Blair's Rings.....# doz. 55&60%
Brown's Rings.....# gro. \$3.40&3.50
Brown's Rings.....# doz. 55&60%
Hill's Rings.....# gr. boxes, \$2.60&2.75
Hill's Rings.....# doz. 50&55%
Perfect Rings.....# gro. \$7.00&7.50
Perfect Rings, # doz.....75&80%

Rivets and Burrs—

Copper.....50&10&60%
Norway Quality or Soft Steel:
Timmers.....80&80&10&5%
Miscellaneous.....80&80&10%
Rivet Sets—See Sets.

**Roasting and Baking
Pans—See Pans, Roasting and
Baking.****Rods—**

Stair, Black Walnut.....# doz. 40%
Stair, Brass, Oval or Hollow.....50&50&10%

Rollers—

Acme Stowell's Anti-Friction.....50&10%
Barn Door, Sargent's list, 60&10&10%
Lane's Stay.....33%&5%
Stowell's Barn Door Stay.....# doz. \$1.00

Rope—

The following prices are f.o.b. New
York or factory; terms, 1% for cash.
Manila, 7-16 inch and
larger.....# 8%
Manila, 1/4 and 5-16 inch.....# 9%
Manila, Tarred Rope, 15 thread.....# 8%
Manila Hay Rope Medium.....# 8%
Sisal.....7-16 in. and larger.....# 7%
Sisal.....3/4 in. and larger.....# 7%
Sisal, Hay Rope.....2 to 10 ply.....# 7%
Sisal Medium Lath Yarn.....# 6%
Cotton Rope:
Best, 1/4 in. and larger.....# 13&14%
Medium, 1/4 in. and larger.....# 10&12%
Common, 1/4 in. and larger.....# 8&10%
Jute Rope.....# 5%&6%

Wire Rope—

List Sept. 1, '94. All kinds, 20&2%&2 cash

Rules—

Boxwood.....80&10&10&10&80&10&10%
Ivory.....50&10&50&10&10&10%
Lufkin's Steel.....50&10%
Lufkin's Lumber.....50&10%

Sad Irons—See Irons, Sad.**Sand and Emery Paper
and Cloth—**

See Paper and Cloth.

Sash Cords—See Cord, Sash.**Sash Locks—See Locks, Sash.****Sash Weights—**

See Weights, Sash.

**Sausage Stuffers or Fill-
ers—See Stuffers or Fillers,
Sausage.****Saws—**

NOTE—Extra 5&10% often given.
Atkins' Circular.....50%
Atkins' Hand.....50%
Atkins' Cross Cut.....40%
Atkins' Mulay, Mill and Drag.....50%
Atkins' One-Man Saw.....40&10%
Atkins' Wood Saws.....40&10%
Atkins' Hand, Compass, &c.....40%
Daston's Circular.....45&50%
Daston's Cross Cut, list Jan. 1, '93, 40&10%
Daston's Hand.....25%
C. E. Jennings & Co.'s.....35&50%
Peace Circular and Mill.....45&10%
Peace Cross Cuts, list Jan. 1, '93, 45&10%
Peace Hand, Panel and Rip.....25&10&5%
Richardson's Circular and Mill.....45&10%
Richardson's X Cuts, list Jan. 1, '93,
45&10&5%
Richardson's Hand, &c.....25&10&5%
Simonds' Circular Saws.....45&50%
Simonds' Crescent Ground Cross Cut
Saws.....35%
Simonds' One-Man Cross Cuts.....40&10%
Simonds' Gang Mill, Mulay and Drag
Saws.....40&45&5%
Wheeler, Madden & Clemson Mfg. Co.,
Cross Cuts, list Jan. 1, '93, 45&10&5%
Hand, Panel and Rip.....30&10&10%
Woodrough & McFarlin:
Cross Cuts, list Jan. 1, '93, 45&10&10%
Hand, Panel and Rip.....25&10&10%

Hack Saws—

Griffin's complete.....50&50&5%
Griffin's Hack Saw Blades.....50&50&5%
Star Hack Saws and Blades.....15&10%

Scroll—

Barnes' No. 7, #15.....25%
Barnes' Velocipede Scroll Saw.....\$15.....25%
Barnes' Scroll Saw Blades.....40%
Lester, complete, #10.00.....15&10%
Rogers, complete, #4.00.....15&10%

Saw Frames—

See Frames, Saw.

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Scale Beams—**

See Beams, Scale.

Scales—

Chatillon's Eureka.....25%
Chatillon's Favorite.....40%
Chatillon's Grocers' Trip Scales.....50%
Family, Turnbull's.....30&30&10%
Hatch, Counter, No. 171, good quality,
doz. \$17.00&18.00
Hatch, Tea, No. 161.....# doz. \$5.75&6.00
Poulsen Scales—Family, Candy,
Grocers and Postal.....33%
Union Platform, Plain.....\$3.00&2.10
Union Platform, Striped.....\$3.15&2.25
"The Standard" Portables.....45&50%
"The Standard" R. R. and Wagon.....60%

Scrapers—

Adjustable Box Scraper (S. R. & L. Co.)
#3.00.....40&10%
Box, 1 Handle.....# doz. \$2.00
Box, 2 Handle.....# doz. \$3.00&4.00
Foot.....55&50&60&5%
Ship, No. 1, # doz., \$3.50; No. 2, \$2.25
Ship, B. I. Tool Co.....\$2.40
Tatum's Box.....30&10%

**Screen Window and Door
Frames—See Frames.****Screw Drivers—**

See Drivers, Screw.

Screws—**Bench and Hand—**

Bench, Iron.....# doz., 1 in., \$2.50;
1 1/2, \$3.75; 1 3/4, \$5.25
Bench, Wood, Beech.....# doz. \$2.00&2.20
Hand, Wood.....30&10%
Hand, Grand Rapids.....30%

Coach, Lag and Hand Rail—

Lag, Common Point, list Jan. 30, '95,
doz. 85&85&5%
Coach and Lag, Gimlet Point, list Jan.
30, '95.....40&20&2%
Hand Rail, list Jan. 1, 1881.....82&4%

Jack Screws—

Millers Falls.....50&10&10%
P. S. & W.....50&10%
Sargent.....40&40&10%
Stearns'.....40&10%
Tatum's.....25&10%

Machine—

List Jan. 1, '95:
Flat Head, Iron or Brass.....60%
Round Head, Iron or Brass.....60%

Set and Cap—

Set (Iron or Steel).....70&10%
Sq. Hd. Cap.....65&10%
Hex. Hd. Cap.....60&10%

Wood—**Manufacturers' Circular Prices**

List Nov. 10, 1892.
Flat Head, Iron.....87%
Round Head, Iron.....85%
Flat Head, Brass.....82%
Round Head, Brass.....82%
Flat Head, Bronze.....83%
Round Head, Bronze.....80%
Rogers' Drive Screws.....87%
Note—An extra 5 or 10% is often given.

Scroll Saws—See Saws, Scroll.**Scythes—**

Grass and Grain.....50&10%

Scythe Snaths—

See Snaths, Scythe.

Sets—**Awl and Tool—**

Brad Awl and Tool Sets:
Wood Hdl., 10 Awls, # doz.....\$3.00
Wood Hdl., 14 Awls, 6 Tools, # doz.
\$3.50&2.40

Alken's Sets, Awls and Tools:
No. 20, # doz. \$10.00, 60&10&60&10&5%
Fray's Adj. Tool Hdl's., Nos. 1, #12; 2,
#18; 3, #12; 4, #9; 5, #7.....50%
Millers Falls Adj. Tool Hdl's., No. 1,
#12; No. 4, #18; No. 5, #18.....15&10%
Stanley's Excelsior:
No. 1, #7.50; No. 2, #4.00; No. 3,
#5.50.....40&10&40&10&5%

Garden Tool Sets—

Ft. Madison Rakes, Shovel and Hoe,
doz.....\$9.00

Nail—

Round, assorted.....# gr. \$3.00&3.25
Octagon.....# gr. \$4.00&4.75
Buck Brothers.....27%
Cannon's Diamond Point, # gr. \$12.25.....50%
Snell's Corrugated, Cup Pt.....60%
Snell's Knurled, Cup Pt.....60%

Rivet—

Regular list.....70&70&10%

Saw—

Alken's Genuine.....# doz. \$4.50&5.00
Alken's Imitation.....# doz. \$3.00&3.10
Alken's Criterion.....# doz. \$4.00
Alken's Adjustable.....# doz. \$6.00
Bemis & Call Co.'s Cross Cut.....30&5%
Bemis & Call Co.'s Plate.....20%
Bemis & Call Spring Hammer.....30&5%
Daston's Star.....25&25&10%
Hammer, Bemis & Call Co.'s new Pat. 45%
Hammer, Seymour, Smith & Son,
doz. \$4.75
Morrill's No. 1, #15.00.....40&20%
Nos. 3 and 4, Cross Cut, \$23.00, 40&20%
No. 5, Mill, \$31.00.....40&20%
No. 10, \$15.50.....40&20%
No. 11, \$16.00.....40&20%
Stillman.....# doz. \$1.00
Taintor Positive, # doz. \$18.....80%

Sharpeners, Knife—

Tanito Mills # gross, \$14.40.....25&33%&4%

Shaves, Spoke—

Iron.....# doz. \$0.95&1.00
Wood.....# doz. \$2.25&2.50
Bailey's (Stanley R. & L. Co.).....50&10%
Goodell's.....25&10%
Stearns'.....40&10%
Tatum's.....25&10%

Shears—

Cast Iron, good quality, # gross, 7-in.,
#14; 8-in., #16; 9-in., #18,
7-in., cheaper grade, # gross,
#17, \$5.50; 8-in., \$9; 9-in., \$11.50.
Acme Cast Shears.....40&40&5%
Straight Trimmers, &c.....70&10%
Second quality.....80&10%
Davenport Cutlery Co.....60&60&10%
Heinrich's Tailors' Shears.....40&40&5%
Seymour's, list Dec. '81.....90&10%
Seymour's Nickel.....50&10%
Seymour's Tailors' Shears.....40&40&5%
Wilkinson's Hedge.....50%
Wilkinson's Shears.....50%

Timmers' Snips—

Cast Handles, Laid with Steel.....40%
Niagara Snips.....40%
Seymour's.....60&10&10%
Wrt. Handles, Steel Blades.....30&10%

Pruning Shears and Tools—

Daston's Combined Pruning Hook
and Saw, # doz. \$18.00.....25&25&10%
Daston's Pruning Hook, # doz. \$12.00
25&25&10%
Eagle Pruning Shears.....60%
John T. Henry Mfg. Company:
Henry's Genuine, Nos. 1, 2 and 22.....50&10%
Henry Pattern, No. 20.....50&25%
Henry's Pattern, No. 21.....50&30%
Conn. Pattern, Nos. 32, 33 and 3.50&25%
Conn. Pattern, No. 4.....50&25%
Henry's Orange Shears.....50&25%
Henry's Grape Shears.....50&20%
Henry's Tree Pruners.....75%
Levin Pruner, No. 23, \$9.00 # doz. 45%
Levin Pruner, No. 24, \$12.90 # doz. 45%
No. 100 Pruning Shear.....60&10%
P. S. & W. Co.....60&10&10%
Seymour's.....60&10&10%
Seymour Smith & Son:
Rockdale.....20%
New Standard Tree Pruner.....80&5%
Others.....65%
Telegraph Tree Pruner.....70&5%
Waters' Tree Pruner.....80&5%
Wheeler, M. & C. Co., Combination,
doz. \$12.00.....25&10&25%
10&5%

Sheaves—Sliding Door—

Stowell's Anti-Friction.....50%
Patent Roller.....60&10&60&10&5%
Patent Roller Hatfield's, Sargent's list,
80&10&80&10&7%
Reading.....70&10&7%
R. & E.....60&10&60&10&5%
Wrightville, Hatfield Pattern.....80&10%

Sliding Shutter—

Reading list.....70&10&7%
R. & E.....60&10&60&10%
Sargent's list.....60&10&10%

Shells—

Brass Shot Shells, Club, Rival, Climax,
65&2%
Brass Shot Shells, first quality.....60&2%
First quality 4, 8, 10 and 12 gauge.....25&10&2%
First quality Rival, Club and Climax
brands, 14, 16 and 20 gauge (87.50
list).....20&10&2%
Quick Shot Reinforced New Victor 40&2%
Smokeless brand, 12, 10, 16 gauge.....33%
Star, Club, Rival and Climax Brands
33%&10&2%
Trap brand 12 and 10 gauge, 33%&10&2%

Shells, Loaded—

Loaded with Black Powder.....40&10&10%
Loaded with Nitro Powder.....40&10&10%
10%

Ship Tools—

L. & I. J. White.....25%

Shoes, Horse, Mule, &c.—**Horse—**

Burden's, Perkins', Phoenix, Old Dominion
Bryden's Boss Crescent, &c.,
from jobbers.....\$3.10&3.25
Bryden's Frog Pressure.....\$4.00
Gibbs' Rubber cushioned.....# set, \$1.50

Mule—

Add 50 cents # keg to above prices.

Shot—

Drop, up to B 25-b bag.....\$1.20&1.25
Drop, up to B, 5-b bag.....30
Drop, B and larger, 25-b bag.....\$1.45&1.50
Drop, B and larger, 5-b bag.....1.50
Buck 25-b bag.....\$1.45&1.50
Buck, 5-b bag.....35
Chilled, 25-b bag.....\$1.48&1.53
Dust Shot, 25-b bag.....2.00
Dust Shot, 5-b bag.....50
These prices are often shaded 5&10%
25 b bag, especially in the West.

Shovels and Spades—

No. 2, Polished, Sq. or Rd. Point, D or
L Handle:
Price # doz.
A1, 1st Grade, 2d Grade,
Plain Back.....\$8.10&8.40 \$7.20&7.50
Strap Back.....7.50&7.80 6.90&7.00
Cleveland Pat'n 7.50&8.10 6.90&7.20
C3, D4,
Plain Back.....\$3.50&4.00 \$5.00&5.00
Strap Back.....5.70&6.00 5.10&5.40
Cleveland Pat'n 5.00&5.20 5.40&5.70
All other sizes add 30¢ # doz.
Black deduct 30¢ # doz.

Shovels and Tongs—

Brass Head.....60&10&60&10&10%
Iron Head.....60&10&60&10&5%

Sieves and Sifters—

Buffalo Metallic, S. S. & Co., # gr.:
16 16&18 18 18&20
Blued.....\$10.80 \$11.40 \$11.40 \$12.00
Tinned.....11.40 12.00 12.00 12.00
Eclipse.....# gr. \$8.00&9.00
Hunter's Genuine.....# gr. \$2.50&3.00
Hunter's Imitation.....# gr. \$2.50&3.00
Shaker (Barber's Pat.) Flour Sifters,
doz., \$2.00.....25%

Sieves, Wooden Rim—

Mesh 18, Nested, # doz. Iron. Plated.
Mesh 20, Nested, # doz. \$0.70 \$0.55
Mesh 24, Nested, # doz. 1.05 1.05
Mesh 34, Nested, # doz. 1.05 1.20

Sinks—**Cast Iron—**

According to list.....70&10&80&10%

Wrought Steel—

Columbus Galv'd and Enamelled,

Slates—(From store).

"D" Slates.....50&10&10&10&5
Unexcelled Notess Slates, 60 line 10s
Victor slates.....80 and eight 10s and 5s

Slaw Cutters—See **Cutters**.**Snaps Harness**—

Covert Mfg. Co., list Jan. '95...45&20&50s
Covert's Saddlery Works:

Banner.....75s
Triumph.....70s
Fitch's Bristol.....40&10s
Fitch's Empire.....50&5s
Fitch's National.....50&5s
Fitch's Clipper.....50&10&5s
Fitch's Champion.....40&10s
Fitch's Victor.....60&5s
German.....50&50&5s
Sargent's Patent Guarded.....70&10&70&10&10s

Snaths—

Scythe.....55s

Snips, Tinner's—See **Shears****Soldering Irons**—

See **Irons, Soldering**.

Spoke Trimmers—

See **Trimmers, Spoke**.

Spoons and Forks—**Tinned Iron**—

Beating, Cen. Stamp Co.'s list, 75&10&80s
Solid Table and Tea, Cen. Stamp Co.'s
list.....70&25s

Silver Plated—

Flat Ware.....60&5&60&10&5s
Rogers & Brother.....60s
C. Rogers & Bros.....60s
Wm. Rogers Mfg. Co.....60s

Miscellaneous—

German Silver.....60&10s
C. Rogers & Bros.:
18 per cent. German Silver.....60s
18 per cent. Nickel Silver.....60s
Silver Metal.....50&10s
Wm. Rogers Mfg. Co.:
18s German Silver.....60s
Rogers' Silver Metal.....50&10s

Springs—**Door**—

Champion (Coll).....50&10&50&10&10s
Gem (Coll).....25s
Rubber, complete.....\$ gro. \$15.00
Star (Coll).....33&10s
Torrey's Rod, 30 in., \$ doz. \$1.10; 10.25
Warner's No. 1, \$ doz. \$1.50; No. 2,
\$3.40
Victor (Coll).....60&10&60&10&5s

Carriage, Wagon, &c.

Elliptic, Concord, Platform and Half
Scroll, 60&10&60&10&10&10 or fol-
lowing net prices:

Tempered Blk. Oil Tempered.
14 in.....\$4.00 \$4.00 \$6.00 \$6.00
16 in.....\$4.00 \$4.00 \$6.00 \$6.00
18 in.....\$4.00 \$4.00 \$6.00 \$6.00
19 in.....\$4.00 \$4.00 \$6.00 \$6.00
Clim's Bolster Springs.....40&2s
Clim's Seat Springs.....\$ pair 48s

Sprinklers, Lawn—

Philadelphia No. 1, \$ doz. \$12; No. 2,
\$15; No. 3, \$24.....35s

Squares—

Nickel plated.....\$ list May 1, '95.
Steel and Iron.....75&10&80&5s
Try Square and T-Bevels.....
60&10&10&70s
Diston's Try Sq. and T-Bevels.....60&10s
Winterbottom's Try and Miter.....50&10s

Squeezers—**Lemon**—

Wood, Common, \$ gr. No. 0, \$5.00;
No. 1, \$6.50; No. 2, \$10.00.
Wood, Porcelain Lined, No. 1, \$ doz.
\$3.25&3.50
Tinned Iron.....\$ doz. \$0.80&1.25
Iron, Porcelain Lined, \$ doz. \$3.25&3.50
Hotchkiss Straight Flash.....\$ doz. \$9.60
Jennings' Star.....\$ doz. \$1.85&1.90
King.....\$ doz. \$3.00

Staples—

Barbed Blind, 1/4, 1/2 and 3/4 in. \$ 5s/6d
Fence Staples, Galvanized, Same Price
Fence Staples, Plain.....\$ See Trd. Rep.
Grand Crossing Tack Co.'s list.....75&10s

Steels, Butchers'—

Dick's.....40s
Foster Bros.....40s
C. & A. Hoffmann's.....40s
Nichols Bros.....50s
John Wilson's, list Sep. 1, '94.....25s

Steelyards.....40&40&10s**Stocks and Dies**—

Blacksmith's:
Butterfield's Goods.....\$5&40s
Waterford Goods.....\$5&40s
Gardner.....40&10s
Green River.....25s
Lightning Screw Plate.....25s
Little Giant.....25s
Pece's New Screw Plates.....35&30s
Reversible Tachet.....25s

Stone—**Scythe Stones**—

Pike Mfg. Co., list '95-'96.....33s/4
Cleveland Stone Co., list Nov., '92.....33s/4

Oil Stones, &c.

Pike Mfg. Co.:
Hindostan No. 1, \$ doz. \$8s
Sand Stone.....33s/4
Turkey Oil Stone, Extra.....33s/4
5 to 9 in.....80s
Turkey Slips.....\$2.00
Lily White Washita.....60s
Rosy Red Washita.....60s
Washita Stone, Extra.....50s
Washita Stone, No. 1.....40s
Washita Stone, No. 2.....30s
Lily White Slips.....40s
Rosy Red Slips.....40s
Washita Slips, Extra.....50s
Washita Slips, No. 1.....70s
Arkansas Stone, No. 1, \$ doz. \$2.5s
Arkansas Stone, No. 1.5, \$ doz. \$3.50

Tanite Mills:
Emery Oil, \$ doz. \$5.00.....50&60s

Stops, Bench—

Cincinnati.....25&10s
Seymour Smith & Son, \$ doz. No. 1,
\$3.50; No. 2, \$3.20
Morrill's.....15&10s
Morrill's, \$ doz. No. 1, \$10.00; No. 2,
\$11.00, 40&20s
Stearns'.....30&5s
Tatum's.....40s

Stops, Window—

Taplin's.....45s

Stove Boards—

See **Boards, Stove**.

Stove Polish—See **Polish, Stove**.**Straps, Box**—

Cary's Universal.....30&10&10s

Stretchers, Carpet—

Cast Iron, Steel Points.....\$ doz. 70&75s
Cast Steel, Polished.....\$ doz. \$2.25
Socket.....\$ doz. \$1.75
Bullard's.....25&10&40s

Stuffers, Sausage—

Miles' Challenge, \$ doz. \$30.....50&50&5s
Enterprise Mfg. Co., list Jan. 17, '93, 35s
National Specialty Mfg. Co., list Jan.
1, '97.....25s

Sweepers, Carpet—

Blissell:
Cosmopolitan, Cyco Bearing.....\$24.00
Criterion.....\$16.00
Furniture Protector, Japanned.....\$22.00
Furniture Protector, Nickleled.....\$24.00
Gold Medal, Cyco Bearing.....\$24.00
Grand, Cyco Bearing.....\$24.00
Grand Rapids, Japanned.....\$22.00
Grand Rapids, Nickleled.....\$24.00
Hall, Cyco Bearing.....\$24.00
Improved Crown Jewel, Jap'd.....\$19.00
Improved Crown Jewel, Nick'd.....\$21.00
Improved Victor.....\$18.00
Premier, Cyco Bearing.....\$24.00
Prize, Cyco Bearing.....\$24.00
Standard, Japanned.....\$20.00
Standard, Nickleled.....\$22.00
Superior, Cyco Bearing.....\$24.00
Woolcom, Cyco Bearing.....\$24.00
Toy Line: Misses' \$9; Little Jewel,
\$9; Little Queen, \$2.50; Child's, \$2.50;
Baby, \$2; Daisy, \$1.50.
Goshen:
Acme, Nickel.....\$24.00
Banner.....\$20.00
Champion.....\$17.00
Common Sense, Nickel.....\$24.00
Easy, Jap'd, \$ doz. \$30, Nickel, \$22.00
Gift Edge, Nickel.....\$24.00
Grand Republic (18 inch) Nickel.....\$33.00
Imperial, Nickel.....\$25.00
Ladies' Friend No. 1.....\$15.00
Ladies' Friend No. 2.....\$16.00
Little Pet.....\$6.00
Majestic, Nickel.....\$24.00
Model, Nickel.....\$24.00
Our Best, Nickel.....\$24.00
Our Leader.....\$18.00
Our Own, Nickel.....\$24.00
Rapid, Nickel.....\$22.00
Reliable.....\$30.00
Select, Nickel.....\$22.00
Star.....\$19.00
Toy.....\$1.50
Triumph.....\$19.00
Sweepers:
No. 2, Oak, Jap'd.....\$18.00
No. 4, Special, Oak and Birch,
Silvered.....\$30.00
No. 4, Regular, Oak and Birch,
Nickleled.....\$32.00
No. 6, Oak and Mahogany, Nick.....\$24.00
Diamond Medal.....\$27.00
Comfort.....\$24.00
Companion.....\$15.00
Sunbeam, Toy.....\$3.00
Dolly, Toy.....75s

Tacks, Brads, &c.—

List March 25, '95.
Carpet Tacks—
American Blued.....90&30s
American Tinned.....90&40&10s
American Cut Tacks.....90&30&10s
Swedes Iron Tacks.....90&30s
Upholsterers' Tacks.....90&35&5s
Gimp Tacks.....90&50s
Lace Tacks.....90&50s
Trimmers' Tacks.....90&30s
Looking Glass Tacks.....70s
Bill Posters' and Railroad Tacks.....
Hungarian Nails.....90&30s
Common and Patent Brads.....55&10s
Trunk and Clout Nails:
Black.....85&5s
Tinned.....80&10s

Miscellaneous—

Double Point Tacks.....90 and 7 tens.
Steel Wire Brads, B. & E. Mfg. Co.'s
list.....50&10&60s
See also **Nails, Wire**.

Tanks, Oil—

Emerald, S. S. & Co.....30-gal. \$3.00
Emerald, S. S. & Co.....60-gal. \$3.75
Queen City S. S. & Co. 60-gal. each \$4.00;
100-gal. \$6.25; 120-gal. \$8.50; 200-
gal. \$14.00; 250-gal. \$17.75
Wilson's:
No. 9.....60&10s
Aztec, Force Pump.....60&10s
Cone Top, Measuring Pump.....60s
Cabinet, Measuring Pump.....50s
Gasoline Tanks.....60&10s

Tapes, Measuring—

American.....50&10&60s
Chesterman's.....25&25&5s
Keefer & Esser Co., Steel and Metallic,
new list, 188s.....35s
Lufkin's Steel and Metallic.....35&10&40&10s

Thermometers—

Tin Case.....80&10s

Ties, Bale—Steel.

Standard Wire, list.....50&10&5s

Ties, Wall—

Cleveland, Steel.....\$ 1000, \$10.00

Tinner's Shears, &c.—

See **Shears, Tinner's, &c.**

Tinware—

Stamped, Japanned and Piced, sold
very generally at net prices.

Tire Benders, Upsetters,

&c.—See **Benders and Upset-**
ters, Tire.

Tobacco Cutters—

See **Cutters, Tobacco**.

Tools—**Coopers'**—

Shaves, Cincinnati Tool Co.....90s
L. & J. White.....90&90&5s

Saw—

Atkins' new list.....40s
Simonds'.....33s/4

Transom Lifters—

See **Lifters, Transom**.

Traps—Game—

Newhouse.....50&50&10s
Onida Pattern.....80&80&5s
Sensible.....33s/4&33s/4&10s

Mouse and Rat—

Dandy.....\$ doz. \$1.75
Marty French Rat and Mouse Traps
(Genuine):
No. 1, Rat.....\$ doz. \$15.00
No. 2, Rat.....\$ doz. \$5.85
No. 3, Rat.....\$ doz. \$4.60
No. 4, Mouse.....\$ doz. \$4.30
No. 5, Mouse.....\$ doz. \$3.00
Hotchkiss Metalite Mouse, 5-hole traps,
\$ doz. 65s; in full cases, \$ doz.....60s
Hotchkiss Imp. Rat Killer.....\$ gr. \$12.50
Hotchkiss New Rat Killer.....\$ gr. \$12.50
Mouse, Wood, Choker, \$ doz. holes, 8@9s
Mouse, Round Wire, \$ doz. \$1.50.....10s
Rat, Decoy, \$ gr. \$10.00.....33s/4
Rat, Sensible.....33s/4
Schuyler's Rat Killer, No. 1, \$ gr. \$13.50;
No. 2, \$ gr. \$15.00

Fly—

Balloon, Globe or Acme.....\$ doz. \$1.25; \$ gr. \$13.50
Harper, Champion or Paragon.....\$ doz. \$1.75; \$ gr. \$16.50

Triers—

Butter and Cheese.....25s

Trimmers, Spoke—

Bonney's No. 1, \$ doz. \$3.75; No. 2,
\$3.75
Cincinnati.....25&10s
Douglas, \$ doz. \$9.00.....20s
Stearns'.....30&10s

Trowels—

Garden.....70s
Diston's Brk and Plastering 25&25&10s
Peace's Plastering.....25&25&5s
Rose Brick and Plastering.....30&10s
Woodrough & McFarlin, Pl st'ring, 25&10s

Trucks, Warehouse, &c.—

B. & L. Block Co.'s list.....40s
Daisy Stove Trucks, Improved pattern
\$ doz. \$18.00

Tubs, Wash—

No. 1 2 3
Galvanized, \$ doz. \$4.00 4 50 5.00
Galvanized S. S. & Co., with Wringer
Attachment, \$ doz. No. 10, \$6.25;
No. 20, \$6.75; No. 30.....\$7.50

Twine—**Binder**—

White Sisal, 500 feet to b.....\$14&8s/4
Standard 500 feet to b.....\$14&8s/4
Manila, 600 feet to b.....\$14&8s/4
Pure Manila, 650 feet to b.....\$14&10s

Miscellaneous—

No. 9, 1/4 and 1/2 Balls.....90s
No. 12, 1/4 and 1/2 Balls.....17s
No. 18, 1/4 and 1/2 Balls.....14s
No. 24, 1/4 and 1/2 Balls.....17s
No. 36, 1/4 and 1/2 Balls.....13s
Chalk Line, Cotton, 1/4 B Balls.....18&20s
Cotton Mops, 6, 8, 12 and 15 B to doz.
80s/4

Cotton Wrapping, 5 Balls to b.....90&16s
American 3-Ply Hemp, 1/4 and 1/2 B
Balls.....90&10s
American 3-Ply Hemp, 1 B Balls (Spring
Twine).....10&11s
India 2-Ply Hemp, 1/4 and 1/2 B Balls
(Spring Twine).....8s
India 3-Ply Hemp, 1 B Balls.....8s
India 3-Ply Hemp, 1 1/2 B Balls.....70&7s/4
2, 3, 4 and 5-Ply Jute, 1/4 B Balls.....4s
Mason Line Linen, 1/4 B Balls.....4s
No. 264 Mattress, 1/4 and 1/2 B Balls.....34s
Wool.....50&5s

Vises—

Solid Box.....70&70&5s

Parallel—

Bonney's.....50&5s
Fisher & Norris Double Screw.....15&10s
Hollands'.....40&40&10s
Merrill's.....25s
Miller's Falls.....45&10s
Parker's.....20&25s
Parker's Oval Slide.....50&10s
Parker's Victor.....90s
Prentiss.....30&25s
Sargent's.....70&10&70&10&10s
Simpson's Adjustable.....25&30s
Stephens'.....25s
Toles' Woodworking.....25s
Trenton.....40&5&40&10s

Saw Filers—

Bonney's, Nos. 2 & 3, \$15.00.....50&10s
Cincinnati.....35&10s
Reading.....40&10s
Stearns' Common, Nos. 0, 1, 2 & 3.....50s
Stearns' Rubber Jaw, Nos. 10 & 38, 38s/4
Wentworth's Rubber Jaw, Nos. 1, 2
and 3.....40s

Miscellaneous—

Signal & Keeler Combination Pipe
Vise.....60&5s

Parker's Combination Pipe:

87 Series.....60s
187 Series.....60&5s
No. 870.....40s

Wads—Price Per M.

U. M. C. & W. R. A.—B. E., 11 up.....60s
U. M. C. & W. R. A.—B. E., 9 & 10.....70s
U. M. C. & W. R. A.—B. E., 8.....80s
U. M. C. & W. R. A.—B. E., 7.....80s
U. M. C. & W. R. A.—P. E., 11 up \$1.00
U. M. C. & W. R. A.—P. E., 9 & 10.....1.25
U. M. C. & W. R. A.—P. E., 8.....1.25
U. M. C. & W. R. A.—P. E., 7.....1.50
Ely's B. E., 11 and larger.....\$1.70&1.75
Ely's P. E., 12 to 20.....\$3.00&3.25

Wagon Boxes—

See **Boxes, Wagon**.

Wagon Jacks—

See **Jacks, Wagon**.

Ware, Hollow—

Aluminum—
S. S. & Co., Reduced List.....40s

Cast Iron, Hollow—

Stove Hollow Ware—
Ground.....70&70&5s
Unground.....75&75&5s
White Enameled Ware—
Maslin Kettles.....50&80&5s
Boilers and Saucepans.....65&65&5s
Tinned Boilers and Spans.....90&10s

Enameled—

Agate and Granite Ware, list Jan. 1,
'94, revised Jan. 2, '95.....40&10s
Second Quality.....70&10&70&10&10s
Ironclad Enameled Ware, Old list.....70s
Never Break Enameled.....70s

Kettles—

Galvanized Tea Kettles—
Inch.....8 9
Each.....40s 45s 50s 55s

Steel Hollow Ware—

Avery Spiders & Griddles.....80s
Avery Kettles.....85s
Never Break Spiders and Griddles.....80s
Never Break Kettles.....85s
Solid Steel Spiders & Griddles.....75&10s
Solid Steel Kettles.....60&10&10s
Solid Steel Ware, Enameled.....50&10s

Silver Plated Hollow—

William Rogers Mfg. Co.....40&10&5s

Washboards—

Solid Zinc:
Crescent, family size, bent frame, \$3.75
Red Star, laundry size, stationary
protector.....\$4.00
Double Zinc Surface:
Diamond, family size, stationary
protector.....\$3.75
Saginaw Globe, family size, station-
ary protector.....\$3.50
Wilson, family size, bent frame.....\$3.50
Single Zinc Surface:
Nalad, protector, family size, open
back perforated.....\$3.15
Diamond, protector, family size,
ventilated back.....\$2.10
Saginaw Globe, protector, family
size, ventilated back.....\$2.00
Wilson, bent frame, family size,
ventilated back.....\$2.00
Eagle, protector, family size, venti-
lated back.....\$1.25

JANUARY 4, 1899.

IRON AND STEEL—

Bar Iron from Store-

Ingot—

